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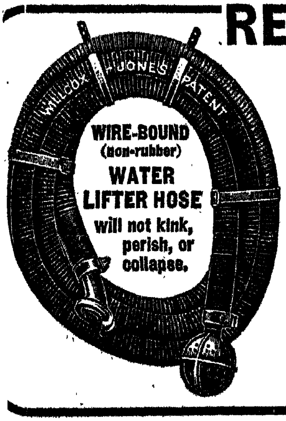

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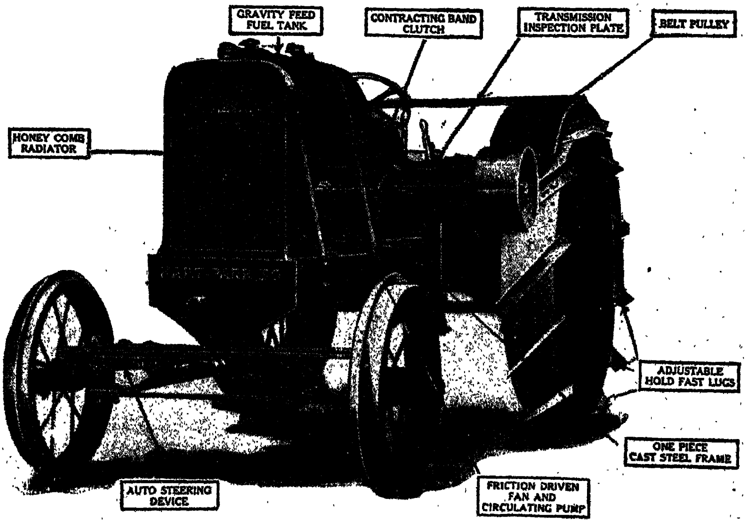
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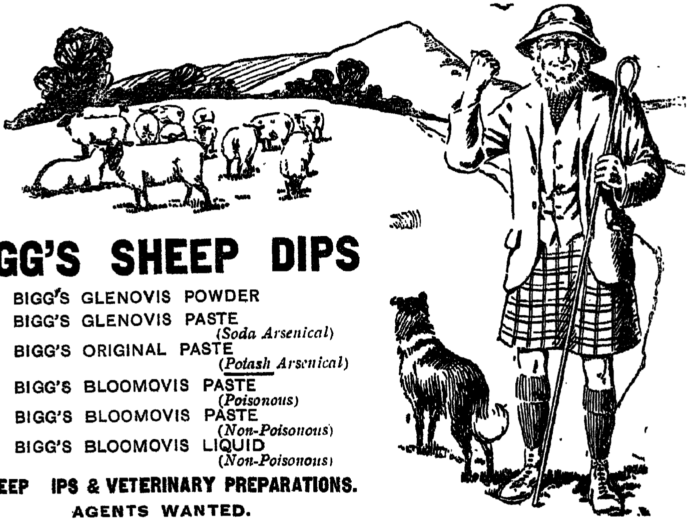

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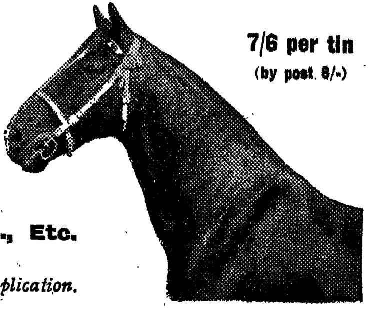

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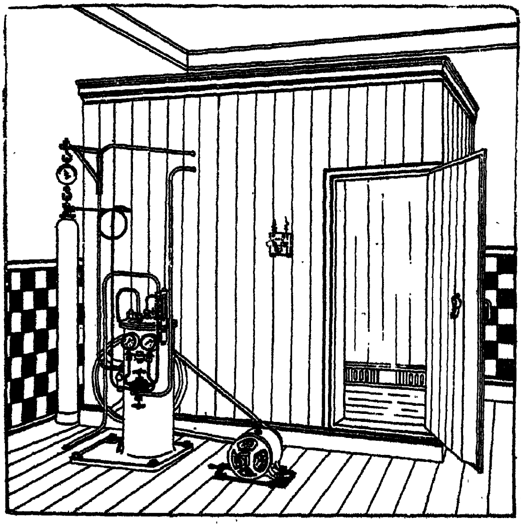

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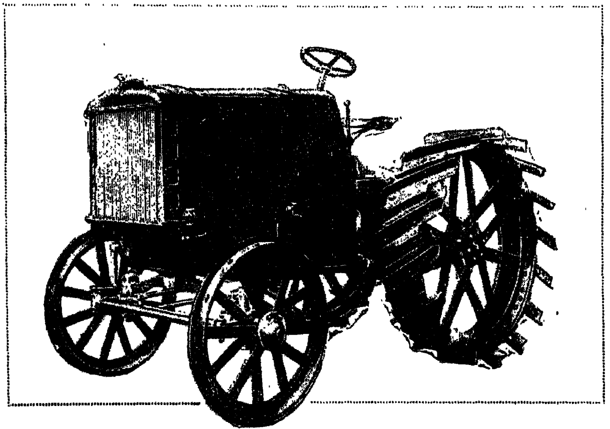

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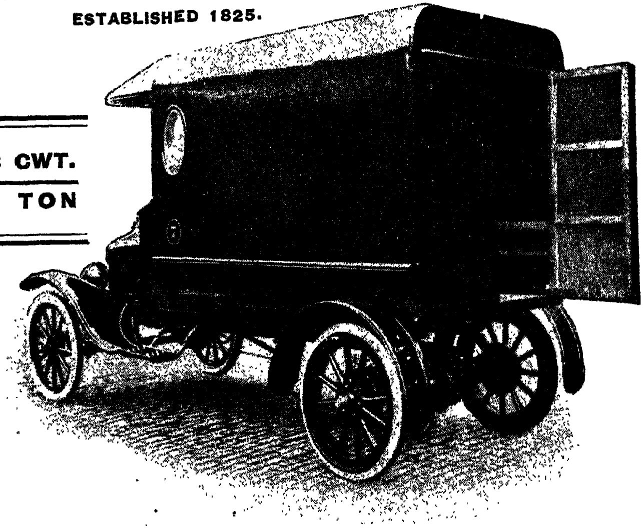

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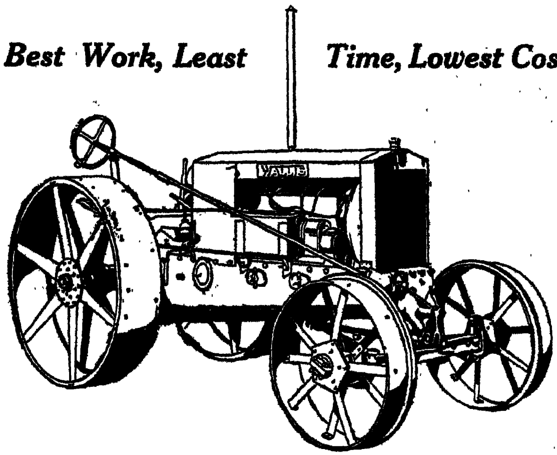

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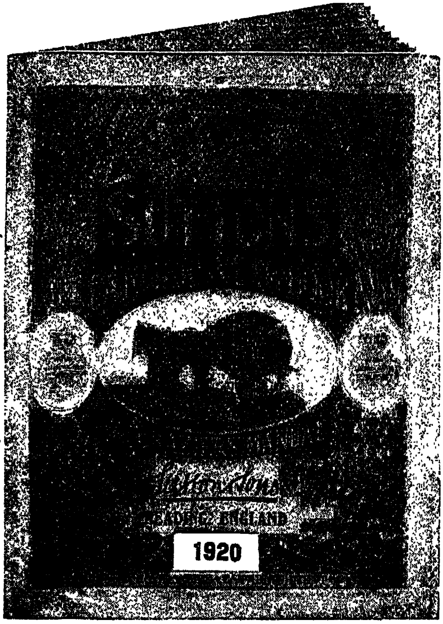

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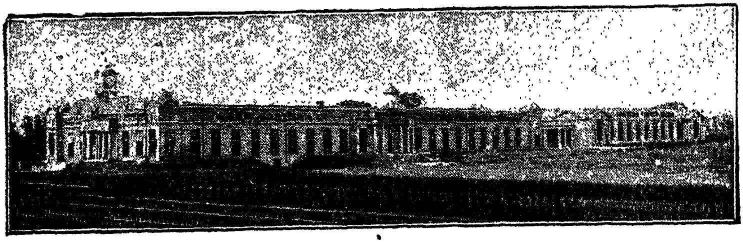

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THE FEEDING OF THE UNITED KINGDOM.

ANY attempt at the present time to deal with the question of national food supplies is beset with peculiar difficulties. During the War, supplies which had previously reached us from some sources were stopped, while from other sources they came in unusual quantities; home production was deflected from its ordinary course, and the consumption of various articles of food was determined, not by choice but necessity. Nevertheless, there was never a time when the feeding of the people aroused so much interest, or the national importance of the problem of our future supplies of food was more generally recognised. When, therefore, I was asked to discuss in the pages of the *Journal* the sources from whence this country may expect to derive its means of subsistence, I undertook the task in the hope that it might be possible to present some, at least, of the facts which have to be considered, and perhaps also to throw some statistical light on questions which have been obscured of late in public discussion.

Sixteen years ago I discussed, in the pages of this *Journal*,[1] "The Food Production of the British Isles." The data at that time were defective, and, indeed, for estimates of meat and dairy produce I had to rely on the results of inquiries made for the Royal Statistical Society, for which I was responsible. In 1908, in connection with the Census of Production, an official inquiry by the Board of Agriculture and Fisheries, the results of which were published in the Report on the Agricultural Output of Great Britain,[2] established a basis for the calculation of home-produced supplies of food, which must be accepted until a further inquiry on the same lines is made—as is projected in the immediate future. In the meantime, however, a Committee of the Royal Society, taking the Agricultural Output Report as a basis, prepared a Report[3] on the National Food Supply, in which the quantities of home-grown and imported foodstuffs were estimated for the five years 1909–13, and the quantities converted into food-value equivalents in terms of calories. Certain of the figures for home-grown produce are arbitrary, but in the main the calculations may be taken as reasonably representing the relation of native to imported supplies of food before the War. In a summarised form, it is as follows :—

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[1] Volume 64, 1903.
[2] Cd. 6277.
[3] Cd. 8421.

	Weight in metric tons			Work-producing power in millions of calories		
	Home-grown	Im-ported	Total	Home-grown	Im-ported	Total
Cereals	1,010,000	3,855,000	4,865,000	3,705,000	14,007,000	17,712,000
Meat	1,615,000	1,070,000	2,685,000	5,369,000	3,521,000	8,890,000
Poultry and eggs, game and rabbits	170,000	161,000	331,000	235,000	226,000	461,000
Fish	715,500	132,900	848,400	392,000	139,000	531,000
Dairy produce (including lard and margarine)	4,704,000	527,800	5,231,800	4,715,000	3,538,000	8,253,000
Fruit	341,000	930,000	1,271,000	168,000	909,000	1,077,000
Potatoes and other vegetables	4,788,000	694,000	5,482,000	4,054,000	758,000	4,812,000
Sugar (including cocoa and chocolate)	—	1,657,000	1,657,000	—	6,633,000	6,633,000
Cottage and farm produce (not included in above)	—	—	—	2,655,000	—	2,655,000
TOTAL	—	—	—	21,293,000	29,731,000	51,024,000

It will be seen that on this calculation of energy-value, about 42 per cent. of the food consumed in the United Kingdom is home-produced, while if sugar is omitted the proportion is 48 per cent.

HOME PRODUCTION.

For nearly forty years prior to the War, British agriculture had been generally regarded as being on "the down grade." Farmers had been more or less in difficulties since the end of the "seventies," and at two periods at least—the early "eighties" and the mid-"nineties"—they had experienced severe crises in which many had been ruined. Those who went under in the stress had been succeeded by others, and farming had been carried on without any material reduction of the extent of land occupied or of the number of farms. But whereas in 1871, nearly 18½ million acres were under arable cultivation in Great Britain, in 1914 the land under the plough was little more than 14¼ million acres. The area of land devoted to the main food crop—wheat—had been reduced relatively to a much greater extent, for whereas in 1871, it amounted to 3½ million acres, in 1914 it had dwindled to less than 2 million acres. On the other hand, the number of live stock had been fairly well maintained, and in the case of cattle substantially increased. Cattle which in 1871 numbered little more than 5¼ millions, had increased by 1914 to 7 millions.

In a comparison of the two years, sheep showed a reduction of about 3 millions, but the figures for individual years are apt to be misleading. In 1871, sheep numbered 27 millions, but in 1881 they fell to 24½ millions, and stood at 26½ millions in 1911, falling to 24¼ millions in 1914, but rising to 25 millions in 1916.

The decrease in the home supply of wheat—notwithstanding a slight increase in the yield per acre—is apparent, but in regard to meat there was certainly an increase in home production. But during the period referred to, the population of Great Britain increased by some 15 millions, and it is only by taking this factor into account that the significance of the figures can be appreciated. This may be most concisely shown in tabular form, the census years 1871 and 1911 being selected for the comparison :—

	1871		1911		Increase (+) or Decrease (−)	
	Acres	Per 1,000 population	Acres	Per 1,000 population	Actual acres	Per cent.
Arable land	18,403,000	706	14,648,000	359	−3,755,000	−20·4
Wheat	3,572,000	137	1,906,000	47	−1,666,000	−46·6
	No,		No		No.	
Cattle	5,338,000	205	7,114,000	174	+1,776,000	+33·3
Sheep	27,120,000	1,040	26,495,000	649	−625,000	−2·3

It will be noted that while the actual reduction of arable land was 20 per cent., the reduction in relation to population was 50 per cent., while as regards wheat it was 65 per cent.

There are no actual statistics on which a comparison of meat production at the two dates can be based, but in view of the progress made during the past forty years in promoting early maturity, it is evident that the total output of meat from the number of stock annually enumerated is greater. That the production of milk increased during the period cannot be proved by figures, but may be inferred from the known fact that the demands of the much greater population were supplied at moderate prices without any appreciable assistance from imports. It is no doubt true that the production of cheese and butter was substantially reduced, but after making full allowance for this, there can be no doubt that the production of milk increased greatly, partly by reason of an increase of cows, but much more by reason of improvement in the dairy stock of the country, and the stimulation of larger output per cow. Similar reasoning indicates that the production of potatoes increased as, again notwithstanding the much greater demand, imported supplies increased in a much less degree, and still remain almost negligible except for a short period in the year.

In short, there is no reason to believe that the total production of food from the farms of the United Kingdom decreased during the forty years before the War, in spite of the marked diminution of the cultivation of wheat. "Man does not live by bread alone," and in nearly all other articles of food, capable of production in the British Isles, there has been a substantial increase in absolute quantities, although the increase has not by any means kept pace with the growth of population.

It would be absurd to minimise the significance of the serious reduction of the arable area, or of the loss of nearly half the wheat-crop grown in this country in the early "seventies." From more than one point of view, this change in the agricultural system of the country was lamentable; but on the other hand it is equally unreasonable to regard this—as it is frequently presented—as a measure of reduced food production, or as conclusive evidence of the decadence of farming. In many respects British Agriculture has made substantial progress. The neglect of Agriculture by the State is a commonplace of the political platform, and no one will contend that successive Governments were over-generous in the attention they gave to the needs and demands of farmers. To give even the State its due, however, it must be admitted that during the twenty years or so before the War, a considerable amount of attention had been given to Agriculture, and much very useful work had been done by the Board of Agriculture. In the sphere of agricultural education alone, a carefully considered scheme had been devised and completed just before the War. In a minority Report of the Departmental Committee on Food Production appointed by Lord Selborne in June, 1915, of which Lord Milner was Chairman, the scheme was described concisely as follows:—

"In the course of our enquiry it has been brought to our notice that the Board of Agriculture and Fisheries, aided by grants from the Development Fund, and in consultation with the Development Commission, have recently much increased the resources of the authorities charged with the provision of agricultural education, and that measures have now been taken for securing scientific advice and assistance in most parts of the country.

"The counties of England and Wales have been arranged in groups associated with central colleges at which a consultative staff of scientific experts is maintained, and these colleges are in turn associated with a series of research institutes, at one or other of which the best available information on any scientific question relating to agricultural development may be obtained.

"In this system there is provided a means by which the county and district committees which are being set up, may, either directly or through the educational staff of their own counties, get into touch with the best authorities on all the ordinary difficulties likely to be met with in developing the resources of the land."

No doubt the system thus established required further development, and the provision of larger financial resources, but the main constructive work was done, and it remained only to build on the foundation thus well and truly laid.

Other instances might be cited in mitigation of the common charge that the State had "neglected Agriculture," but the more important point to remember is that British Agriculture has not in the past depended wholly, or indeed mainly, on the State for its improvement. The progress of farming in this country is a record of self-help. Private enterprise and voluntary efforts have furnished the motive power for agricultural advancement. The work of the Royal Agricultural Society, and of many other associations, has provided in this country the stimulus which in other countries the State alone has been expected to supply. The improvement of live stock, and the establishment of the pedigree herds and flocks of Great Britain as the unrivalled source of supply for the whole world, are the achievements of voluntary enterprise stimulated and directed by such societies as this. Except in the matter—no doubt vitally important—of the elimination of contagious diseases among stock, a task of no small magnitude in view of the close proximity of the British Isles to countries in which such diseases are always rife, the State has done little to assist the marked improvement of live stock which is the triumph of British Agriculture. Shortly before the War, the Departments of Agriculture had begun to help, and progress is now being made, by the aid of State funds, in the endeavour to "level up" the average standard of excellence more nearly to that of the best. On these lines there is a wide field for State assistance in agricultural improvement, but the hope may be expressed that whatever developments may take place, nothing will be done to discourage the activity of private enterprise to which Agriculture owes so much. It may be that the long roll of eminent benefactors, from Jethro Tull to John Bennet Lawes, who have devoted their time and talents, as well as their financial resources, to the improvement of Agriculture, is closed, but it would be regrettable if a State-aided and controlled system should in any way tend to repress the opportunities for individual and collective effort by agriculturists themselves, to which British Agriculture owes so vast a debt.

Any attempt, at the present time, to forecast the precise extent of the share of home-grown produce in the total food supply of the United Kingdom during the next few years would be futile. The experience of the War affords no helpful indication. Between June, 1916, and June, 1918, about 2 million acres of permanent pasture were broken up in the United Kingdom, and in addition 1¼ million acres of temporary pastures were ploughed specially and the area under corn crops was increased by nearly 3 million acres. The area under potatoes was also increased during the same period by 356,000 acres. These results were obtained under the urgent stress of war conditions, and by the free exercise of compulsory powers, both in Great Britain and Ireland. The effect was to increase substantially for two years the quantity of cereal food and of potatoes, and to reduce the proportion of breadstuffs required to be imported. By the extension of allotments and by the action of private persons, there was also a considerable increase in the quantity of vegetables grown. On the other hand, there was for various reasons, a decrease in the production of other foodstuffs, notably meat, milk and butter.

In the year 1918, the total production of wheat in the United Kingdom was about 64 per cent., and of oats about 45 per cent. more than the pre-war average. The exceptionally good harvest increased the difference, but in any case it was a notable achievement. The home supply of meat was estimated to have been reduced in that year by nearly 30 per cent., of bacon by more than 35 per cent., of cheese and butter by about 20 per cent., and of milk by about 10 per cent., although the statistical basis for these estimates is uncertain. As the demand for these commodities was lessened, partly by compulsory rationing and partly by high prices, the proportion of the actual quantities consumed, which was supplied from native sources, was fairly maintained, but it is evident that from these facts no conclusions can be drawn as to the future. The increased production of certain kinds of food was due to the intervention of the Government, and the decreased production of others was attributable mainly to exceptional war conditions. The extent to which these two factors will be maintained or modified in the near future would involve a discussion of political and economic questions of considerable complexity.

Leaving the problem of future production unsolved, we may pass to a consideration of the sources of food supply outside the British Isles, premising only that, in any event, no serious person regards independence of all kinds of imported foods as anything but a dream. The United Kingdom may be self-supporting in regard to certain articles, as in the past it has practically been in regard to milk and potatoes, but it will never cease to require a large proportion of its diversified dietary from over-seas.

THE IMPERIAL CONTRIBUTION.

It is difficult in a short space to convey any adequate impression of the Agricultural resources of the British Empire. An attempt to present the facts in detail would involve a statistical survey extending far beyond the limits of an article in these pages. In my reports on those parts of the annual Agricultural Statistics[1], which included the main figures relating to the world's agriculture and the imports of agricultural produce to the United Kingdom, I endeavoured from time to time to bring into prominence certain points of interest in regard to the production and distribution of food in the Empire, but the subject is one which calls for comprehensive treatment in the light of the progress of events during the War. I quote from my reports the following figures, which give a partial idea of the resources of Canada and Australasia as compared with those of the mother country. The first shows the number of acres under cereals and potatoes per 1,000 of population as returned in 1911:—

	Wheat	Barley	Oats	Maize	Potatoes
United Kingdom . . .	43	39	90	—	26
Australia	1,670	25	139	77	34
Canada	1,440	195	1,282	44	64
New Zealand . . .	214	31	400	6	31

A corresponding comparison for live stock shows the number of each kind per 1,000 of population, as under, at the same date:—

	Cattle	Sheep	Pigs
United Kingdom	262	672	94
Australia	2,655	20,876	249
Canada	937	305	465
New Zealand	2,004	23,806	346

These few figures may suffice to indicate, without further elaboration, the actual resources in grain and meat of a part of the Empire, without reference to those of South Africa, India, Egypt or the West Indies, and without entering into the more speculative field of a discussion of the potential resources of these and other countries under the British Crown.

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[1] The publication of these parts was suspended at the beginning of the War and has not yet been resumed.

We may proceed to examine, as concisely as possible, what were the contributions of the Empire to the feeding of the United Kingdom during the years immediately preceding the War. We may also see, so far as figures are available, what were the contributions from the same sources which reached us during the war, premising only that these were determined not by the quantities ready for shipment, or by the extent of the demand for them, but mainly by the opportunities and facilities for transport which were possible under the exigencies of war.

The following were the receipts, in thousands of tons, of *wheat* (including flour in terms of wheat) from Imperial sources :—

	Average 1909—13	1914	1915	1916	1917	1918
Australia	621	623	9	220	591	217
Canada	1,134	1,797	1,220	1,371	1,195	1,185
India	970	536	698	281	137	36
New Zealand . . .	24	1	—	2	—	—
Other British Possessions .	—	—	1	1	—	5
	2,749	2,957	1,928	1,875	1,923	1,443

The small receipts from Australia in 1915 were due to the failure of the crop sown in 1914, and in fact the Commonwealth had to import wheat during that year to meet her own requirements. She made a great effort to assist the Mother Country by extending her wheat acreage in 1915 by 3 million acres, but by the time the crop was ready for shipment the scarcity of tonnage began to be felt, and it was impossible to send sufficient freight on the long trip to lift the wheat which was waiting, with the result that a large stock accumulated. Canada also made a great effort and added 5 million acres to her wheat area in 1915, and 2 millions more in 1918.

It should be noted in connection with these and subsequent figures that the quantities sent to the United Kingdom during the War do not represent the total contributions of the Empire to the Allied cause, as large shipments were also made to France and Italy. At the end of 1915 a scheme was devised (under the supervision of a committee of which I was chairman) for joint buying by the Allies, and thereafter the destination of supplies was mutually arranged according to the respective needs of each country from time to time. A year later the scheme was taken over by the Wheat Commission and eventually the purchase and shipment of all kinds of grain for the use of the Allies were carried out by the Wheat Executive, for which the Wheat Commission acted as agents.

During the War *barley* was for a short time used somewhat freely for admixture with wheat as a breadstuff and was found to be on the whole the most suitable and convenient of all grains for that purpose. It has now, however, again reverted to its normal utility as a feeding stuff for animals and an ingredient of beer. Of oversea supplies before the War, not more than one-sixth came from within the Empire. On the average of 1909—13, India sent 128,000 tons and Canada 36,000, while about 3,000 tons were received from Cyprus and about 1,000 tons from Australia and New Zealand respectively. During the War both India and Canada shipped larger quantities, until the shortage of shipping in 1918 shut off all supplies except from North America, and severely restricted even those. In 1916 India and Canada each sent about 143,000 tons, and in 1915 Cyprus sent 9,000 tons.

While barley may be reckoned as a crop which is used directly or indirectly for human sustenance, *oats* are of course only utilised to a comparatively small extent for food. Before the War the total annual imports were about 900,000 tons, of which about 100,000 tons came from within the Empire, Canada sending about 70,000 tons and New Zealand about 20,000 tons. Australia and South Africa also sent small shipments. In 1918 the quantity received from Canada reached 170,000 tons, but only very limited supplies reached the United Kingdom from other parts of the Empire.

About 10,000 tons of oatmeal and 9,000 tons of rolled oats were received from Canada before the War, and these supplies were fairly maintained, and in fact exceeded during the War.

Although *maize*, like barley—except for cornflour and other "maize products"—can only be regarded indirectly as human food its importance as a factor in maintaining the supply of bacon and pork has been vividly impressed upon us during the War. The pre-war imports amounted to over 2 million tons per annum, of which more than half came from Argentina, and not more than about 110,000 tons from within the Empire. South Africa contributed about 42,000 tons, India 35,000 tons, and Canada 27,000 tons. South Africa increased her supply markedly during the War, sending 109,000 tons in 1915, 125,000 tons in 1916, 134,000 tons in 1917, and 122,000 tons in 1918. Canada had practically no surplus to send in 1914 and 1915, but in 1916 she sent no less than 109,000 tons, and in 1917 82,000 tons. An unusual feature was a shipment of 58,000 tons from Egypt in 1916.

Next to wheat, the most important cereal, from the point of view of direct food supply, is *rice*, and of this, before the War, India sent about 60 per cent. of the total amount reaching the United Kingdom. During the War India greatly increased her contribution. In 1909–13 she sent on an average about 150,000 tons per annum, but in 1915 she sent 289,000 tons, in 1916 335,000 tons, and in 1918 346,000 tons—a very welcome contribution to the war-time food supplies.

India also greatly increased her supplies of two other forms of cereal food—*haricot beans* and *lentils*. Of the former she increased her supply from some three or four thousand tons before the War, until in 1917 it reached 46,000 tons. Lentils also, which came before the War only to the extent of some 8,000 tons, amounted to 23,000 tons in 1917.

The facts relating to the *meat* supplies of the United Kingdom are conveniently set out in the Report of the Inter-Departmental Committee on Meat Supplies.[1] The expanding resources of the Empire are indicated by the marked increase which has taken place in the number of cattle and sheep in the Dominions in recent years:—

	Cattle	Sheep
Canada, 1901	5,576,000	2,510.000
Australia, 1901	8,491.000	72,040,000
New Zealand, 1901–2	1,362,000	20,233,000
South Africa, 1904	3,501,000	16,434,000
	18,930,000	111,217,000
Canada, 1918	10,051,000	3,053,000
Australia, 1917[2]	10,739,000	80.106,000
New Zealand, 1918	2,888,000	26,538,000
South Africa[2]	7,500,000	31,981,000
	31,178,000	141,678,000

It will be noted that during the past twenty years cattle increased by 65 per cent. and sheep by 27 per cent.

During the twelve months ending June 4, 1914, the imports of meat from British Dominions amounted to 95,800 tons of beef and 210,600 tons of mutton, representing respectively 7·8 and 37·8 per cent. of the total supply. The Committee calculate that "within the next few years" the surplus of meat available for export annually from the oversea Dominions will be as follows:—

	Beef Tons	Mutton Tons
Canada	25,000	—
Australia	120,000	70,000
New Zealand	40,000	160,000
South Africa	25,000	—
	210,000	230,000

It is pointed out, however, that Australian supplies are uncertain owing to the recurrence of drought. As regards

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[1] Cmd. 456.

[2] Estimated.

South Africa, the quality of the meat needs improvement before the export trade can be fully developed, but vigorous steps are being taken in this direction. Rhodesia is developing as a cattle-raising country, the number of cattle having increased from 740,000 in 1914 to 1,200,000 in 1919, half of them being native stock. The immediate market is the Transvaal, but the farmers are building a co-operative canning works, and contemplate the erection of a freezing plant, while the British South Africa Company also are contemplating the building of meat works.

During the War the exportable surplus of meat from Australia and New Zealand was purchased by the British Government, together with such cargoes of meat as could from time to time be obtained from Canada and South Africa. The Australasian meat was purchased for the duration of the War, and three months thereafter, and the New Zealand contract has been extended to include all meat put into store up to June 30, 1920, so as to tide over the period of liquidation of the accumulation of stocks caused by the diversion of insulated steamers for the conveyance of American troops to Europe.

The Committee, after discussing various suggestions for stimulating increased meat production in the Dominions, observe that they are impressed by the way in which it has developed without artificial stimulus, and point out that the real problems are those of improving quality, extirpating disease and providing against the risk of drought. The Report emphasises the fact, which is commonly overlooked in popular speculations about oversea meat supplies, that the dominating factor is insulated shipping, of which 75 per cent. is British. Meat from Australasia is brought to this country in ships carrying not meat only, but also other produce for which the best market has hitherto been the United Kingdom. "The possibilities of economically diverting such steamers (including the obtaining of profitable return cargoes), is limited, and the greater problem is more likely to be the obtaining of ships for the development of new markets for meat. These considerations appear to make it certain that a large proportion of Australasian meat will always come to the United Kingdom."

In connection with the Imperial supplies of meat, the question of the admission of store cattle from Canada, naturally came before the Inter-Departmental Committee, and although the evidence has not been published, it is apparent from the Report that many of the witnesses referred to the subject, and that they enunciated diverse views. The divergence of opinion which has existed in this country since 1896, when the importation of live cattle except for slaughter at the ports was prohibited, was reflected in the Committee, which failed to agree and presented majority and minority reports on this question. The pros and cons are fairly summarised, and the subject is at any rate brought into its true proportion in relation to the supply of meat. It is pointed out that when Canadian stores were admitted their number did not exceed 50,000 or 60,000 per annum, whereas the total number of stores reared in the United Kingdom every year is about 2,500,000. Four of the six members of the Committee[1] recommend the repeal of the Diseases of Animals Act, 1896, and the revival of Section 26 of the Diseases of Animals Act, 1894, which would "enable the English Board of Agriculture to make orders admitting animals into the United Kingdom from abroad without being subject to immediate slaughter at the ports, provided that the Board are satisfied that reasonable security is afforded against the importation of diseased animals," and that on the passing of the necessary legislation the Board "should make an Order permitting the admission of cattle from Canada." The main grounds for this recommendation were that Lord Ernle had assured the Canadian representatives at the Imperial Conference in 1917, that he was in favour of "the removal of the embargo," that there is "not the slightest ground to exclude Canadian cattle on the score of disease," and that the strongly expressed wishes of the Canadian Government are of the highest importance.

The other two members of the Committee[2] were unable to recommend an alteration of the present law, while regretting that this involved the rejection of a proposal supported by the representatives of the Dominion. They stated that it was not until measures were adopted to prevent the introduction of living animals for distribution throughout the country, that stock-breeders felt secure, and cattle began steadily to increase. While admitting that cattle born and bred in Canada are exceptionally free from disease, the long open frontier precludes the question of risk of disease being decided by the healthiness of Canadian cattle alone. When Canadian stores were admitted, the maximum number of cattle sent from the Dominion was 121,000 in 1890, of which 40 per cent. were fat. Since fat stock only were admitted, Canada sent in one year (1903), 191,000 cattle. The interest of Canada is admitted to lie in the export of beef, and if stores could be sent the numbers would be small, uncertain and variable, and the maintenance of the present conditions tends to increase, and not to diminish, the total meat supply of the United Kingdom.

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[1] Mr. Andrews Uthwatt, Sir F. T. Boys, Mr. E. J. Harding and Sir T. Robinson.

[2] Mr. W. C. Bridgman, M.P. (Chairman), and Sir Henry Rew.

Supplies of *pig-meat* from within the Empire are practically confined to Canada, which before the War sent about 24,000 tons of bacon and hams. During the War the supply of bacon was largely increased, and in 1917 reached 88,000 tons.

About 27,000 tons of *rabbits* were imported annually before the War, of which about 90 per cent. came from Australasia. During the War the remaining 10 per cent. ceased, and we depended entirely on Australia and New Zealand, which in 1916 increased their supplies to over 30,000 tons.

About 23 per cent. of our pre-war imports of *butter* came from within the Empire, Australia sending about two-thirds of this quota. Their supplies during the War were somewhat reduced, except in 1918, when, with some help from Canada and New Zealand, the quantity nearly reached 50,000 tons, or slightly more than the pre-war average.

Before the War over 80 per cent. of imported *cheese* came from Canada and New Zealand, which together sent about 96,000 tons. During the War this quantity was somewhat increased, and reached nearly 120,000 tons in 1917.

From Canada and Egypt we drew a substantial quantity of *eggs*, and supplies from both sources were largely increased during the War, especially in 1916.

SUPPLIES FROM FOREIGN COUNTRIES.

Outside the Empire, the main sources from whence the United Kingdom derived its daily bread are shown in the following table which gives the quantity of *wheat* (including flour in terms of wheat) received from each country. The figures are in thousands of tons :—

	Average 1909—13	1914	1915	1916	1917	1918
United States	1,317	2,097	2,551	3,587	3,269	2,485
Argentina	842	329	614	226	336	720
Russia	789	369	43	1	6	—
Roumania	46	20	—	—	—	—
Germany	44	64	—	—	—	—
Chile	38	3	—	6	—	—
Other Countries	80	57	25	1	33	80
	3,156	2,939	3,233	3,821	3,644	3,285

The promptitude with which the United States helped to fill the gap left by the elimination of Russia and Roumania was one of the notable economic facts of the War.

Russia was much the largest contributor to our *barley* supply, the average annual quantity received from that source before the War being 354,000 tons. In 1914 we received 269,000 tons, but after that nothing. Roumania, which sent 122,000 tons, and Turkey, which shipped a similar quantity, were also shut off after the Dardanelles were closed. The United States, which sent 135,000 tons before 1914, increased her shipments up to a maximum of 450,000 tons in 1916.

Russia and Argentina each sent about 280,000 tons of *oats* annually before the War, but not more than 55,000 tons were received from Russia in 1914 and thereafter none. Supplies from Argentina were fairly well maintained until 1917 when, owing mainly to shipping difficulties, they were greatly reduced. On the other hand, the United States which sent only 38,000 tons before the War, sent greatly increased quantities, reaching 409,000 tons in 1915 and 406,000 tons in 1917. Before the War we imported as much as 120,000 tons annually from Germany. Chile, from whence we received about 30,000 tons annually in 1909-13 shipped much larger quantities so long as tonnage was available, and reached 60,000 tons in 1917.

Our chief source of *maize* supply—Argentina—sent in 1915 double its pre-war contribution, or nearly 2¼ million tons. The United States, which stood next on the list, had very little to spare in 1914 and 1915, but in 1916 sent about the same as before the War—350,000 tons—and in 1917, 534,000 tons. Roumania, with an average supply of 266,000 tons, and Russia with 187,000 tons, were the only other important contributors, although Bulgaria sent some 23,000 tons.

The main source of *rice* supplies, outside the Empire, was Siam, which before 1914 sent about 33,000 tons, and during the War increased the quantity very substantially, contributing in 1915 no less than 143,000 tons.

The report of the Inter-Departmental Committee already referred to contains the following particulars as to supplies of meat to the United Kingdom from foreign countries :—

South America is the great present source of meat supply. In the Argentine Republic there are about 29,000,000 cattle (the number having remained almost stationary during the War) and between 50,000,000 and 60,000,000 sheep; about 45 per cent. of the cattle are native. Uruguay has about 8,000,000 cattle and about 11,000,000 sheep. Chilian Patagonia has about 4,000,000 sheep. Brazil has an unknown number of cattle, usually estimated at about 30,000,000, but the great majority of them are not suitable for the British market, though the meat, like that of Uruguay, is acceptable in Continental markets. Venezuela has, during the War, exported frozen meat to France, and Colombia, though at present undeveloped, offers the possibility of a trade of moderate dimensions. The American meat companies have also begun to develop Paraguay.

Central America has a large number of wild and semi-wild cattle, but the possibilities of an export trade are very uncertain for a long time. China (Yangtze Valley and Manchuria) has cattle of fair quality, and has done an export trade to France and Italy. Madagascar has also a freezing works, from which moderate quantities have been exported to France.

The effective meat-exporting capacity of those foreign countries which need to be taken into consideration at present is as follows, including output from works now under construction :—

	Beef	Mutton
	Tons	Tons
Argentine and Uruguay	600,000	70,000
Patagonia (Argentine and Chile)	—	30.000
Brazil	250,000	—
Venezuela	8,000	—
Paraguay	5,000	—
Madagascar	8,000	—
	871,000	100,000

For oversea supplies of *pig meat* we relied mainly on Denmark and the United States, and it is of some interest to record the quantities received from these countries before and during the War. The figures represent thousands of tons of bacon and hams :—

	Average 1903—13	1914	1915	1916	1917	1918
Denmark	104	136	103	82	56	1
United States	130	115	245	275	230	503
Other Countries	15	26	3	10	10	6
	249	277	351	367	296	510

The maintenance of Danish supplies in the early years of the War and their subsequent disappearance is attributable to the fact that mutual arrangements were at first made, under which the supply to this country was to be continued at not less than the pre-war level. This had the double effect of helping to feed this country, and of preventing supplies from reaching the enemy, as if our markets were closed there was evidently no other outlet. This policy was, however, abandoned at a later stage. A noteworthy fact was the appearance of China as a source of supplies of bacon. In 1914 only fourteen tons arrived from that country, but the imports steadily increased up to nearly 4,000 tons in 1918.

Belgium, and to some extent, Holland, sent *rabbits* before the War amounting to about 2,000 tons per annum. Russia sent some 6,000 tons of dead *poultry* and the United States, France, Austria-Hungary, China, and Italy were also contributors to this market. The United States and China maintained, and indeed substantially increased, their supplies, but those from the other countries practically ceased during the War.

More than half our imports of *butter* from foreign countries came from Denmark, the quantity from that source being about 85,000 tons. This was well maintained during the first two years of the War, but later fell away from the same cause as already referred to in the case of bacon. Russia, which sent 33,000 tons before the War, also maintained the trade in 1914 and 1915, but disappeared from the market in later years, while the smaller supplies from Sweden followed the same course. France, owing to her own increasing difficulties, failed to keep up her trade—which amounted to about 14,000 tons—in the latter part of the War. On the other hand, Argentina which before the War sent only 3,000 tons, contributed 16,000 tons in 1918.

Of *margarine* practically all the supplies before the War came from Holland. They averaged in 1909-13, 58,000 tons, increased to 138,000 tons in 1916, and dwindled to 15,000 tons in 1918. In this case, unlike most others, increased home production was one of the causes of decreased imports, the manufacture of margarine in the United Kingdom having been very greatly stimulated.

The United States, which had almost ceased to send *cheese* to this country prior to 1914, resumed the trade during the War and contributed 24,000 tons in 1918. Holland, which was our chief foreign source of supply, kept up a somewhat fluctuating trade, this being affected by mutual arrangements of the same nature as those made with Denmark for butter and bacon.

Of our total imports of about 2,300,000 thousands of eggs, Russia sent about one-half and Denmark about one-fifth, the other chief contributors being Austria-Hungary, Italy, France, Holland, Germany, Sweden and Morocco. By 1918 none remained except Denmark which was reduced to less than one-third of her pre-war trade. The United States came in as a supplier, but the quantities were relatively small.

SUMMARY.

Having indicated briefly the main sources of supply, it may be of interest to summarise shortly as regards certain of the chief articles of food, the extent to which we were supplied before the War from within the Empire and from foreign countries, respectively. The following statement shows the average quantities annually imported during the five years prior to the War. I have added the average imports during the three War years, 1915-17. The figures represent thousands of tons.

	Thousands of Tons			
	British Empire		Foreign Countries	
	1909—13	1915—17	1909—13	1915—17
Wheat (and Flour)	2,749	1,909	3,156	3,566
Beef	70	114	338	334
Mutton	173	134	92	51
Bacon and Hams	25	74	250	338
Cheese	96	111	22	27
Butter	47	38	161	89
Rice	141	286	100	127
Sugar	121	239	1,693	1,229

The proportions of oversea supplies of these articles coming from the Dominions before the War were as follows :—

	Per cent.		Per cent.
Wheat and Flour	47	Cheese	81
Beef	17	Butter	23
Mutton	70	Rice	59
Bacon and Hams	9	Sugar	7

One effect of War conditions was to disturb these proportions, although on the whole to a less degree than might have been anticipated. I have omitted 1918 in the above statement, partly because it was not, strictly speaking, a complete War year, and also because imports were then dominated by the shortage of tonnage, so that the sources from whence food was drawn are mainly significant of the supply and direction of shipping. The figures for the War years, however, include the year—1917—of the great effort of the enemy to blockade our coasts and reduce us to starvation. It will be observed that, with the exception of wheat, mutton, butter and sugar, we imported during the three years considerably more than in the years before the War. This appears more clearly if the total average quantities imported annually in each of the two periods are compared. I have in this case added the figures for the single year 1918, when, as already mentioned, the position became most abnormal.

	1909—13	1915—17	1918
Wheat and Flour	5,904	5,475	4,728
Beef	408	448	474
Mutton	265	185	106
Bacon and Hams	275	412	601
Cheese	118	138	119
Butter	208	127	79
Rice	241	413	379
Sugar	1,814	1,468	1,306

Incidentally, these figures demonstrate the complete failure of the enemy to achieve his purpose. What he did achieve, however, was so to reduce the available supply of shipping, at a time when the entrance of the United States into the War had greatly increased the demands upon it for the carriage of troops and war materials, as almost to cut us off from all our Dominions except Canada. The battle line of the Empire is very far-flung, and a vessel can bring several cargoes across the Atlantic in the time occupied in going to Australia and New Zealand for a single cargo. The reduced proportion of food sent from within the Empire, therefore, connotes no failure on the part of the Dominions to assist in feeding the home-country—for indeed their efforts to do so were magnificent—but was the direct result of the need for economising the use of ships. It has already been pointed out that the imports to the United Kingdom do not represent the quantity of food supplies shipped by the Dominions. Shipments to France or Italy were equally contributions to the war necessities of the Allies, and under the scheme of co-operation in obtaining supplies, it was immaterial whether the food was landed at Liverpool. Marseilles or Genoa. As a rule, indeed, the aim was to send vessels to the nearest of the three countries, subject of course to their relative requirements and to the capacity of the several ports.

Under the impulse of the War, not only the British Empire, but also other food-exporting countries whose ports were open, made a notable effort to increase their production. In the case of crops their effort is measurable not by the quantities actually exported—which depended on the harvest as well as on means of transport—but by the increase in the extent of land put under crop. The acreage varied from year to year from different causes. Thus Canada increased her wheat area by 5 million acres in 1915, and slightly more in 1916, extending it again in 1918, so that in that year it exceeded the pre-war area by about 7 million acres. On the other hand, Australia added nearly 3 million acres in 1915, but as the difficulties of shipment of the crop increased, the acreage steadily declined. India made a great effort in 1914, and a still greater one in 1917, when the wheat area exceeded the pre-war figure by about 7 million acres, only to fall in 1918 considerably below the figure of 1913. By taking the year of maximum acreage in each of the Dominions, and comparing the total with the acreage under each crop in 1913, we obtain some measure of the possible expansion of the Empire's grain-producing resources at the present time. The figures represent thousands of acres :—

	1913 acreage.	Maximum War acreage.	Possible increase.
Wheat	50,248	68,212	17,964
Barley	9,472	11,955	2,483
Oats	11,655	16,299	4,644
Rye	129	586	457
Maize	11,363	12,856	1,493

The figures include Canada, Australia, New Zealand, South Africa, India and Egypt, and it will be seen that, taking each at its highest point, the total area under cereals was increased by 33 per cent., while the area under wheat alone increased by 36 per cent.

The only other sources from whence supplies of cereals in any substantial quantity could be obtained during the War, were the United States and Argentina. Statistics of crops for the latter country are not sufficiently complete to be used for this purpose, but the extension of the cereal area in the United States, again taking the maximum points, is of interest:—

	1913 acreage.	Maximum War[1] acreage.	Possible increase.
Wheat	50,114	71,526	21,412
Barley	7,499	9,679	2,180
Oats	38,399	44,400	6,001
Rye	2,557	6,576	4,019
Maize	105,820	116,730	10,910

In the United States therefore, taking the acreage of each crop at the maximum reached in any one year since 1913, the total extension would amount to no less that 44 million acres, or an increase of 22 per cent. This, however, is not a reasonable figure, as, obviously, in any year one cereal crop may merely take the place of another without any increase in the total area under cereals. But the increase by nearly 43 per cent. in the wheat acreage is eloquent of the potentialities of the United States in this connection.

Statistics of live stock for foreign countries—and particularly for those countries which may be looked to for increasing supplies of meat—are unsatisfactory, but such as they are they have already been given.

Holland and Scandinavia were during the latter part of the War, compelled to reduce their live stock very drastically, and some time must elapse before they will be able to recover their export trade in dairy produce and pig meat. But depending as these countries—and especially Denmark—do so greatly on this trade, it is certain that before long their supplies will appear in our markets in large quantities. As to Russia (including Siberia), and South Eastern Europe, speculation at the present time as to the re-appearance of their products in the world's markets is futile.

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[1] I have included 1919 in this table as a War year, as the amount of land placed under crop in the United States in that year was directly affected by War conditions.

On a broad survey however, there appears, in my view, no reason to suppose that in the future the United Kingdom will fail to receive from overseas all the supplies of the main articles of food which she is willing to buy. As I have remarked elsewhere,[1] "So far from the War having shown any grounds for fears of imminent world shortage, it has disclosed potential resources which are ready for development, and demonstrated that for any period in the future which directly concerns the present generation, ample supplies of food are assured under an adequate stimulus to production."

The problem for the future in regard to the feeding of the United Kingdom, is not, after the next year or two, so much one of supplies, but of demand. What will be the purchasing power of the people, and the rate of the consumption of the main articles of food, when economic conditions begin to become stable? It is true that the demand for the primary necessaries of life is in normal conditions very constant, though a rising standard of comfort, such as was apparent for many years before the War, tends to reduce the effective demand for the commoner foods and increase it for those which are less easily obtainable. It is an old axiom that the growing prosperity of a community reduces the consumption of bread, and increases the consumption of meat. The influence of price on consumption is one of the commonplaces of business, although during the last year or two it seems sometimes to have been overlooked in estimating the nation's requirements. No doubt reckless expenditure by large classes of the community, especially since the Armistice, somewhat confused the issue, but the ordinary rules governing human action are still dominant. It is well-known for instance, that the meat ration which was fixed for the purpose of restricting consumption, was inoperative for that purpose, as the high prices were a more effective restriction, and the public did not purchase as much as they were allowed to do. Similarly, it appears to have occasioned some surprise when it was discovered that the public did not require as much milk at 11*d.* or 1*s.* per quart as they did before the War at 4*d.* or 5*d.* Price is, of course, only an index of real value, and it appears certain that price-levels will be for many years to come, much higher than before the War. In international trade the fact that buying and selling are an exchange of commodities is less obscured than it is in home trade, but whether the consumer buys from the British farmer or from overseas, it is equally true that the amount of the food he can buy depends on the amount of the articles which he produces to exchange for it. Thus, as all roads lead to Rome, so every discussion of the nation's requirements leads to the conclusion that increased production is the only means by which national prosperity can be regained, and the nation's food supply assured.

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[1] *Food Supplies in Peace and War.*—Longmans, 1920.

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THE PRODUCTION OF CLEAN MILK.

THE demand of the public for a clean and pure milk supply has now become very insistent. This insistency is due to the fact that the public has long recognised the necessity for and the importance of a better supply produced in a cleanly manner and free from the bacteria of disease. We may say that the clamour for clean milk began with the beginning of the 20th century. This was followed a few years later by promises on the part of an enlightened President of the Local Government Board, Mr. John Burns, of legislation to ensure the desired result. These promises reached fruition some years later in the Milk and Dairies (Consolidation) Act of 1915 by which it is hoped to effect great improvements in the character of our milk supply. This Act, on account of the intervention of the War, has not yet been put into force.

It must be admitted that the average farmer has done little to meet the public demand for purer milk. While he has heard the call he has felt that what is demanded of him is impossible without the expenditure of much labour and money. He has suffered from his want of knowledge and has carried on without visible attempts at improving his methods. He has also suffered on account of the lack of support on the part of the public in not offering a higher price for an article of higher value than the average. But our general milk supply, of which the quality is quite undefined and which varies within wide limits, is capable of great improvement without the expenditure of much labour, if any, but only by the employment of improved methods and the exercise of a certain amount of care. Public Health officers have perhaps devoted too much attention to the character of the building and too little to the treatment of the milk itself. While good and well-arranged buildings make for the health of the cows and for better management, it is attention to details in the treatment of the milk which tells on its quality as regards cleanliness.

By the term clean milk we do not mean milk which is free from visible dirt. Milk may contain no visible dirt yet may be excessively impure from the number of its contained bacteria or, as it is called, the bacterial content. These bacteria, apart from the bacteria of tuberculosis, typhoid fever and other diseases, are liable to cause serious and often fatal digestive disturbances in children and invalids, and, what is important from the purely commercial standpoint, cause more or less rapid deterioration of the milk depending on the number of bacteria present. It is thus not only a question of national health but of agricultural economics that the milk supply should be improved.

Milk as it comes from the cow, although not sterile, contains but few bacteria, to which are added others from the time it leaves the cow until it reaches the lips of the consumer, the number depending on the treatment, or mal-treatment, to which it is exposed. First it receives bacterial contamination at the farm, then in course of transit, then during delivery and lastly, but not less important, at the consumer's house. The bacteria added in its whole course are encouraged to multiply or inhibited from so doing according as the temperature of the milk is high or low, a high temperature up to 100°F. favouring their multiplication and a low temperature, below 50° F., inhibiting their growth.

As the term bacterial content has been mentioned, and as it will recur in the discussion, it is advisable to explain at this point what it means. The bacterial content is estimated in the bacteriological laboratory in a special manner. The process consists in placing a certain amount, a cubic centimetre, of milk or of milk diluted to a certain definite amount, into a quantity of sterile culture medium which is then poured on to sterile covered plates. These plates are placed in the bacteriological incubator, kept at a definite temperature, it may be at 20° C. (68° F.), the temperature of the ordinary room, or at 37° C. (98° F.), normal human temperature. After the lapse of 72 hours at the former temperature or 48 hours at the latter, the colonies of bacteria found to have grown on the plates are counted. Each spot or colony growing in the medium, which is specially designed to favour growth, indicates one original bacterium. If the total colonies in each plate are counted and the amount of milk added is known the number of bacteria in a cubic centimetre can be calculated. The number of bacteria growing at 20°C. in 72 hours per cubic centimetre (per c.c.) of milk is called the bacterial content.

A rough idea of the amount of milk in a cubic centimetre may be obtained if it is mentioned that there are three and a half cubic centimetres in a teaspoonful.

The bacterial content of milk as it leaves the farm gives a general indication of the cleanliness or want of cleanliness in its production and handling. After it leaves the farm the bacterial content is no such guide as another important factor, namely temperature, comes into action, a rise favouring multiplication of the bacteria present and increasing the bacterial content no matter what care might have been exercised initially.

Examinations of the milk supply of the five large Yorkshire towns showed that the milk as it left the farm contained anything from 5,660 bacteria per c.c. to 1,048,000 per c.c. Of 73 samples, 8 contained under 15,000 per c.c., or an average of 8,530 per c.c.; 15 under 100,000 per c.c., or an average of 74,480 per c.c.; and 16 over 100,000 per c.c., or an average of 240,450 bacteria per c.c., as the milk leaves the farm. These figures indicate wide differences and lead to the discussion of their causes at the place of production. On the other hand the milk delivered to the consumers, after passing through all the vicissitudes of transport and delivery, including the effect of temperature and added contamination, contained anything from 11,750 bacteria per c.c. to 3,200,000 per c.c., or an average for 71 samples of 240,000 per c.c. These figures were found in Yorkshire, but other observers have found even worse results. Eyre, for example, found milk retailed in London containing as many as 30,000,000 bacteria per c.c.

It is not practicable at the present time to lay down definite standards of purity for our milk supply, but it is practicable to put forward certain general standards or ideals to be aimed at. These general standards can only be attained by a careful study of the factors influencing the bacterial content of the milk from the time it leaves the cow until it reaches the consumer. The factors vary greatly in their relative importance and demand full consideration.

At the cowshed, with which we are concerned to begin, the factors influencing the bacterial content may be discussed under the following heads :—

(1) The cowshed.
  (*a*) Construction and surroundings.
  (*b*) Lighting and ventilation.
  (*c*) Water supply.
  (*d*) Milk-house or milk-room.
  (*e*) Cleansing.

(2) The cow.
  (*a*) Interior of udder.
  (*b*) Exterior of udder.

(3) The milker.
  (*a*) Hands and clothing.
  (*b*) Wet and dry milking.
  (*c*) Mechanical milkers.

(4) Milk handling.
  (*a*) Cleanliness of milk vessels.
  (*b*) Straining.
  (*c*) Cooling.
  (*d*) Transport and delivery.
  (*e*) Pasteurisation.

THE COWSHED.

Although the vigilance of the individual farmer is of greater importance in the production of pure milk than the buildings themselves, nevertheless, the character of the buildings do have an influence in obtaining a satisfactory product. For instance, a well constructed cowshed facilitates and lessens the work entailed in the various manipulations, efficient lighting encourages cleanliness of the premises, good ventilation favours the health of the cows, and proper drainage and regular cleansing preserve the cleanliness of the cows.

Construction and Surroundings.

No elaborate construction is necessary, but everything should be so arranged as to facilitate easy management and easy cleansing. The size should be such as will allow at least 600 cubic ft. per cow when the cows are put out during some portion of the day, and 800 cubic ft. when not allowed out. The internal walls should have a smooth and impervious surface, which can be obtained by the use of glazed bricks or cement, to the height of at least six feet so as to assist in preserving cleanliness. The upper walls and roofs should be such as do not harbour dirt and are capable of being cleansed readily.

Cows should be stalled in single or double stalls, so arranged and of just sufficient size that the cows are unable to turn round in them, an important matter if the floor is to be kept clean.

The usual practice is to have the stall far too long, making it possible for the manure to fall on the place on which the cow subsequently lies and to soil the udder and other parts which we desire to be kept clean. Attention to this detail would save a large amount of labour in dairying. Care should be taken to have the gutter of sufficient width and depth (2 ft. by 6 in.) to prevent stoppage of the flow by droppings, and with a fall towards that part of the cowshed where it passes outside through the wall of the cowshed, discharging into a trapped gully in the open air away from the door or window, whence it passes to the sewer or to a cesspit at a sufficient distance. No covered drain should exist inside the cowshed but a removable iron grid may protect the gutter where it crosses the passage.

Feeding troughs should be so constructed as to be easily cleansed, and a supply of water should be laid on to each stall. Each cow should preferably have a separate feeding and drink-trough as troughs common to two or more cows may be a source of infection, especially of tuberculosis.

The yards round the cowshed should be properly paved and drained, so that there is not only an appearance of cleanliness, but the cows are able to move along a clean path into the cowshed without having to splash through a filthy yard by which the udders and flanks get contaminated. The filthy yard through which cows have to splash is far too common.

An accumulation of manure should not be tolerated near the windows or doors of the cowshed. The manure heap should be placed as far away as possible, not only to prevent odours being imparted to the milk, but to protect the cows from the fumes given off and to keep the flies away from the cowshed and the milk.

Lighting.

The lighting should not only be sufficient but so arranged as to enable every part of the cowshed to be exposed to view. Windows should be provided with a southern aspect so that the cows and cowshed receive as much of the health-giving and microbe-killing sunshine as possible. As our own, so must the cows' lives be brightened by the sunshine: everything which adds to their health adds to the farmer's profit. The window-space provided, and this means a glazed window and not a hit-and-miss barred window, should not be less than three square feet per cow. Insufficient light tends to slovenliness and want of cleanliness in the handling of milk.

Ventilation.

Cows need fresh air as much as human beings if they are to be kept in a healthy condition and free from tuberculosis. It is a great mistake to close up the openings tightly in the winter time as the cows require fresh air then as in the summer. So long as draughts are avoided a free entrance of fresh air can do nothing but good, stimulating the circulation and aiding the digestion, especially at a time when they have restricted exercise in the open air. Ventilation can be secured by having the upper halves of the windows made to open hopper-wise, the incoming air being directed upwards over the cows and not on to them. The best arrangement for both lighting and ventilation is to have hopper windows on opposite sides so as to secure free and uninterrupted through ventilation, the hopper portions being so arranged that they can be shut when it is necessary to shut out a strong wind. Where windows exist only on one side satisfactory through ventilation can be made by having ventilation openings or grids on the opposite side so placed as not to direct the incoming air on to the heads of the cows. Cowls or roof ridge ventilators form very effective outlets for vitiated air, and the cowshed should, if possible, be open to the roof.

Water Supply.

The water supply should be pure and ample. It must be pure not only for the cows but for the cleansing of milk vessels and utensils, by which typhoid fever might be transmitted, and ample so that it can be used for washing out the cowshed floors and lower walls, and for cooling the milk. Without an abundance of water the full measure of cleanliness cannot be attained.

Cleansing.

Cleanliness is the great watch-word in dairying and this should begin with the premises. Manure should be removed twice daily and general swilling with water should take place as often as necessary to keep the floors, passages and lower walls clean. Whitewashing of the upper walls should be carried out three times in the year, twice during the winter when the cows are indoors and once during the summer. Attention to general cleanliness and to ventilation lessens that distinctive or "cowy" flavour which is so characteristic of milk coming from badly managed cowsheds.

A very practical point in cleanliness is that if the cowman would clear away any manure falling on the floor of the stall much labour would be saved in keeping the cow's udder and flanks clean.

MILK-HOUSE OR MILK-ROOM.

Sufficient attention is not always devoted to the provision of a suitable milk-house or milk-room. Sometimes one finds the milk and cans kept in an annexe to the farmhouse kitchen where all the treatment of cans is carried out. This is a practice which is greatly to be condemned. The milk-house should not be entered from the dwelling-house, but should have an independent entrance door. It should in its simplest form be composed of two parts, one devoted to the treatment of milk-cans and utensils and the other to the milk itself. The one part, the wash-room, should be provided with a copper or boiler for obtaining a plentiful supply of hot water, and if possible with a supply of steam, for sterilising the cans and utensils, with tubs for cleansing these things and with racks or tables for draining and holding them until they are used. In the second part, which should have a window facing north so as to keep out the heat of the sun, the milk should be collected, cooled and stored. In this room all treatment of the milk should be carried out after it leaves the cowshed, where it should not be allowed to remain after milking. Milk should never be cooled in the cowshed but in the milk-house, which, if properly constructed and arranged, will be free from dust and almost free from air bacteria.

The construction of the milk-house may be simple. The walls may be of brick or concrete, with smooth inner walls, or may be partly of concrete and partly of wood, but the floor must be of impervious material, preferably cement concrete, which is cool and easily cleansed.

In the milk-house the two most important items to provide are an abundance of hot water or steam for cleansing the utensils and a plentiful supply of cold water for cooling the milk. A water tank through which cold water can be kept running is a most useful adjunct to the place where the milk is kept, for in this the milk churns can be kept for cooling. In more elaborate milk-houses there may be a refrigerator, a separator, or other modern dairy appliances. The simplest type has been recounted here but a room of three parts, one part containing the copper or boiler separate from the other two, is more convenient in many respects. Again it is desirable for provision to be made for the milkers washing their hands and for keeping their overalls, and this can either be a separate apartment or can be supplied in the wash-room.

THE COW.

Milk may receive some of its bacterial content from the interior of the udder or from the exterior of the udder and neighbouring parts of the cow. The bacteria obtained from both these sources may not only be great in number but serious in importance, and full consideration of them is demanded.

Interior of the Udder.

Milk, as it is obtained naturally from the cow, is not free from bacteria or sterile, as is often supposed. Apart from disease of the udder, milk drawn by hand may contain a number of bacteria varying greatly in different cows and in different quarters of the same udder. The writer has found in one cow in the fore-milk as many as 6,000 bacteria per c.c., in the mid-milk 3,548 per c.c., and in the strippings 2,824 bacteria per c.c.; and in another cow as few as 33 bacteria per c.c. in the fore-milk, 1 bacterium per c.c. in the mid-milk, and 3 per c.c. in the strippings. It is surprising that the cow giving as low as 33 bacteria per c.c. in the fore-milk from one quarter of the udder gave as many as 2,016 per c.c. from another quarter; while that giving 6,000 per c.c. in the fore-milk from one quarter gave as low a number as 108 per c.c. from another quarter. So there is no constancy in the number. Owing to the very large number of bacteria found in the fore-milk, and other observers have found greater numbers than the writer, it is advisable to withhold the first drawn milk from the milk churn. The loss entailed in discarding this milk is not great as the first drawn milk is the poorest in butter fat.

Where there is disease of the udder, the milk may contain bacteria which are a danger to the consumer. Two such diseases are tuberculosis and acute inflammation or garget. In tuberculosis of the udder the tubercle bacillus may not appear in the milk until the disease is marked; on the other hand the bacillus may be found in the milk without there being found, except on the most careful examination by an expert, any marked change in the texture or feel of the udder. It is this latter fact that necessitates the adoption of particular care and special means in detecting tuberculous dairy stock at the earliest possible stage of the disease. The special means is the tuberculin test which, on account of its importance, will be better considered when dealing with the question of tuberculosis separately.

In inflammation of the udder or garget in the acute form the milk is almost certain to contain bacteria which may be the cause of sore throat or illness in those partaking of the milk.

It should be a strict rule that whenever anything abnormal is found in the udder, evidenced by swelling, hardening, or thickening, or by the appearance of blood-stained, lumpy or stringy milk, the milk should be withheld from the general product of the cowshed and a veterinary surgeon should be called in to make an examination and give skilled advice.

Exterior of the Udder.

The exterior of the udder and the neighbouring parts are a source of great contamination. This contamination is not only very serious and striking but also most readily preventable. It is only in a small minority of cowsheds that steps are taken to deal with this form of contamination in a proper manner. The cows are usually ungroomed and the udders uncleansed, and it is quite common to find cows being milked with their haunches, flanks and udder plastered with dung, some of which becomes detached during the process of milking. In milking with a wide-mouthed pail without any attempt to cleanse the udder or free it from readily detachable dirt, a very considerable number of bacteria may fall into the milk during the time occupied in milking. To prove this, bacteriological plates were exposed for two minutes under the udders of cows during milking. These collected on an average 440 bacteria when the cows were kept out of doors in the summer, and an average of 4,752 bacteria when the cows were indoors in winter. The plates used were only one-ninth the area of a 12-inch milking-pail, so that if we multiply these figures by nine we get 3,960 and 42,768 bacteria dropping into the milking-pail during each two minutes.

Further, the hardened manure on the udder and flanks of the cow often gets detached and falls into the milk. This manure is simply teeming with bacteria. When manure is fresh it contains as many as 8,000,000 bacteria per gram, but when it has been sticking to the hair of the cow it may contain the extraordinary number of thirteen thousand millions of bacteria (13,000,000,000) per gram. As a gram is about two-thirds the weight of a threepenny piece an idea is obtained of the small quantity of manure necessary to cause very serious pollution.

One sometimes hears it said that the milk is strained and that the dirt is taken out. But the damage is then done. The bacteria which constitute the serious contamination (it is not the dirt itself which is dangerous) have become washed out in the process of straining and the vegetable matter and crude dirt remain in the strainer.

The first step in the elimination of contamination is to prevent the cow's udder and haunches from becoming soiled with manure by having the stall of such length that the manure falls into the manure gutter and not on the stall, as has already been mentioned, and to clean the animal as soon as it does get soiled and before the material gets time to harden on the hairs, when it is difficult to remove. This step is necessary and reasonable and is one to which the farmer cannot offer objection.

Much discussion has occurred as to the next desirable step, which is to cleanse the udder before milking. In summer-time when the cows are out in the fields the udders are usually comparatively clean, but in the winter the udders very readily get soiled from the floor of the stall. It has already been shown that the contamination from the udder in winter is ten times that in summer.

If the udders are dry brushed before milking an improvement results, but the improvement is much greater if the udders are washed with a wet cloth and partially dried, only a slight degree of moistness remaining. No bad results need be feared from the washing, either on the quantity of the milk or on the condition of the udder; washing has been done in many farms for years without any bad results either during the winter or the summer.

To show the effect of cleansing the udders on the bacterial content of the milk an experiment was carried out in which three cows had their udders washed, the others in the cowshed being untreated. The three cows which were washed gave with their mixed milk a bacterial content of 900 per c.c., while those which were untreated gave a bacterial content of 17,600 per c.c. This was a striking result, the difference being due solely to the dirt falling into the pail during milking as the pails and cans were thoroughly sterilised by steam during the experiment.

But there is a simpler method of excluding dirt with its bacteria in the process of milking, and one which is applicable to all farms and which involves no increase in labour. This is the use of the covered milking-pail. If farmers would prevent the cows getting dirty, and if they would simply dry brush the udder before milking (not immediately before but a few minutes before to allow the dust to settle) and then use the covered milking-pail, one of the most important factors in producing dirty milk would be eliminated. The need for washing the udders would not be so necessary, for with a pail of the proper construction nearly all the bacteria and dirt falling from the udder would be prevented from getting into the milk.

THE MILKER.

From the milker serious contamination of the milk may arise. It may not always be great in amount but it may be dangerous in quality, for infection may be transmitted from a milker to the milk supply and result in an outbreak of infectious disease amongst the consumers. Epidemics of scarlet fever and typhoid fever have been caused in this way. On account of this danger the farmer should ensure that no person suffering from an illness engages in milking until examined by a doctor and found to be free from infectious disease. An infective person may very readily infect the milk in the operation of milking, the hands, in the case of careless persons, being infected from the mouth or nose in the case of scarlet fever, or in the course of his toilet in the case of typhoid fever. Milkers should be impressed with the danger of contamination through their hands and should be required to wash their hands not only before milking but in the course of milking should the need arise when the hands become soiled.

Sneezing or coughing over a milk can or pail could very possibly be a source of danger, but apart from the danger, the very idea of sneezing or coughing over milk is repellent.

The nature of the clothing cannot to any extent influence the quality of the milk, but a milker who is of careless habits may, besides allowing his own clothing to get into a dirty condition, also allow his hands to be soiled from his clothing in the course of milking and so pollute the milk. It not only looks well but it has a good influence on those handling milk if overalls are insisted on.

A word or two may not be amiss with regard to wet-milking which is often a source of great contamination, and at the same time disgusting to observe, especially when the hands of the milker or the teats of the cow are not clean. In wet-milking the milker usually passes some of the milk on to his hands or dips his fingers into the first-drawn milk. As milking goes on the fingers get more wet and the dirt more rubbed off the fingers and teats until sometimes there are dark drops of filth dripping into the milk. After seeing the operation on a few occasions one forms the view that wet-milking should be strictly prohibited. That may be a strong view, but it could be modified only to the extent that an exception be made in cases where the size of the teats demand it—only a few instances—in which strict cleanliness of the hands should be insisted on. Milkers who make a practice of wet-milking should certainly be shunned like lepers.

Machine milking.

Mechanical milkers or milking machines have come into greater popularity in recent years chiefly owing to the difficulty in obtaining good and trustworthy hand-milkers, but also owing to the proved efficiency of some machines of modern make. The machine milker eliminates certain sources of contamination of the milk already pointed out, for instance, the udder and flanks of the cow and the hands of the milker, but it brings into action other sources.

In the first place there is the contamination from a diseased udder, tuberculosis or garget, secondly, there are the bacteria in the dust and air sucked in when the cups fall off, not an uncommon occurrence, and lastly there is the serious pollution from the teat cups and rubber tubes which are difficult to cleanse properly without the adoption of special methods.

The first may be guarded against by the exercise of care by the cowman who should recognise by the feel any change in the texture of the udder. Where there is suspicion of morbid conditions the withdrawal of the milk by hand may give evidence and prevent lumpy or blood-stained milk getting into the milk supply. But if the practice of discarding the first drawn milk were adopted the possibility of abnormal milk getting into the general milk supply in machine-milking would be overcome. It is difficult to prevent altogether the cups dropping off the teats, but the occurrence can be made more rare by taking precautions to ensure that a teat-cup of proper size is used for the teat and that it is properly fixed preparatory to milking. A slight degree of moistness favours the attachment of the cup.

The third source of contamination is the most important and is especially marked in the warmer months of the year when the heat favours the multiplication of bacteria in any milk left in the teat-cups, which in some cases have rubber linings difficult to clean, and in the rubber tubes. With proper treatment and due care, milk of as good quality can be had by machine as by hand, but in the absence of that particular care which the machine demands, much worse results can be obtained than by hand. The writer has found milk produced by the machine in two farms to contain as many as 492,000 and 1,392,000 bacteria per c.c., worse than that coming from some of our dirtiest farms, even although these two farms were managed well in every other respect.

The rubber parts cannot be cleansed by means of boiling water or steam as they perish rapidly, so that recourse must be had to special treatment. The procedure recommended is to suck through the cups and tubing a stream of cold water, then a stream of tepid soda-water and afterwards warm water to rinse out the soda. The parts are then taken asunder, those composed of metal being cleansed by means of boiling water or steam, those of rubber being immersed in a solution of brine and chloride of lime until they are to be used at the next milking. The brine solution is made by adding 10 lbs. of common salt and ¼ lb. of chloride of lime to seven gallons of water. More chloride of lime should be added to the solution each week as it loses its strength.

MILK HANDLING.

Under the term milk handling will be considered the treatment or handling of milk after it leaves the cowshed. It is important that the milk should be exposed as little as possible in the cowshed and should be removed to the milk-house directly after it is drawn from the cow. The reason for this is that the air of the cowshed contains many more organisms than the milk-house or milk-store which must of necessity be particularly free from dust and bacteria. Experiments by exposing bacteriological plates to the air have shown the fairly large amount of bacterial contamination which milk exposed in the cowshed may obtain from the air. This contamination is lessened when the cowshed is well ventilated and kept clean, and when care is exercised in not feeding hay or dusty foods to the cows immediately before or during milking. But in any case the milk should be removed to the milk-house, pailful by pailful, so as to avoid manipulation in the cowshed. Should this procedure be not possible on account of the distance of the milk-house the churn into which the milk is emptied should be covered with a lid to keep out the bacteria.

Cleanliness of Milk Vessels.

Too great stress cannot be placed on the need for particular cleanliness of all pails, cans and utensils with which milk comes into contact. Carelessness or over-sight in this regard may have a disastrous effect on the milk, especially in summer when warmth favours the growth of bacteria. Old milk may contain hundreds of millions of bacteria per cubic centimetre, so that the effect on the fresh milk of want of cleanliness with respect to one or more cans can be imagined as being very large.

At the farm an abundant supply of hot water is essential. If the cans and utensils were properly cleansed or sterilised by boiling water or steam at the farm a considerable improvement in the quality of the milk would be effected. With the exclusion of the dirt from the udder by the use of the covered milking-pail and the sterilisation of the cans and utensils a product could be obtained which would go a long way towards meeting our demand for a clean and pure milk supply. The farmer must concentrate his attention especially on these two factors. So strongly convinced is the writer of the importance of these two factors that he would place the advantages of the covered milking-pail and the provision and utilisation of an abundant supply of boiling water or steam on every farm before any of the building improvements which so often have been regarded as the essential preliminary.

Boiling water kills most bacteria with a few seconds exposure, but hot water when used for rinsing cans quickly cools and diminishes in its effect so that to be efficacious a fresh supply should be available for each utensil. Steam is employed for the purpose of sterilisation in the largest farms and in creameries, and might be more freely used with great profit in smaller farms as well. A few seconds application of the steam jet to the can will almost completely sterilise it. A simple steam jet could be readily prepared in the smallest farm by using a paraffin lamp of the Primus type to generate the steam. A simple apparatus of this kind has been recommended by the Bureau of Animal Industry in America, and manufacturers in this country might find in this idea a profitable and marketable article.

An example of the influence on the purity of milk of the two important factors, dirty udders and dirty cans, may be quoted. A cowshed was kept under the observation of the writer from the beginning of June to the end of November. This was of quite rough construction, fairly well lighted and ventilated, and no unusual labour was expended on its cleanliness. At the commencement of the experiment, in June, the bacterial content of the milk was found to be 106,600 per c.c. Then attention was drawn to the milking-pails and cans, which were cleansed efficiently and steamed. This resulted in the bacterial content being lowered to 61,000 per c.c. Afterwards, in July, attention was called to the udders of the cows which were dry brushed, when the bacterial content was reduced to 13,800. In November, when the cows were indoors and the brushing continued, the number of bacteria rose to 18,000 per c.c., but on washing the udders the bacterial content of the milk from all the cows fell to 3,460.

This cowshed would certainly not have scored well as regards building and general surroundings yet the quality of the milk became excellent as a result of attention to the two great factors.

After being sterilised, cans and utensils should be kept on racks with the openings downwards to prevent bacteria falling into them, and in a proper place, preferably in a part of the milk-house, where the air is likely to contain few bacteria and where there is an absence of dust.

Straining.

Straining is a procedure almost universally adopted in farms and dairies, yet if milk were drawn in a cleanly fashion and handled with a due regard for its purity it would scarcely be required. The process has to be resorted to because care is not exercised in preventing pollution of the milk by dirt, and then it only sifts out what is apparent and disgusting to the naked eye, for it fails to extract the bacteria which have been carried in by the thousands and even by the millions on the polluting visible matter. Straining improves the commercial quality of the milk but not its purity. The best filters fail to remove the bacteria but succeed in distributing the serious pollution over large quantities of the milk. For example, a hardened piece of manure containing thousands of millions of bacteria may be deposited on the filter and be softened and washed by every gallon of milk passing through the filter until there is only the harmless but unsightly vegetable matter of the manure left to tell the tale of the havoc. For the very reason that strainers or filters remove the vegetable matter and gross dirt but not the bacteria, the amount of sediment in the milk as it leaves the farm gives no indication of the care or cleanliness adopted in its handling. A milk almost free from sediment may be as carelessly produced as one showing a large amount, because by efficient straining all visible dirt may be removed. But the number of bacteria present gives the desired information and it is on the bacterial content that we look as an indication of cleanliness of production.

In a series of experiments the writer found that where the udders were cleansed the amount of sediment in the unstrained milk amounted to 8·7 parts per million of milk, but where the cows were left dirty the sediment in the unstrained milk amounted to 72·5 parts per million or 8·3 times the amount in the former.

The most efficient strainers are those in which prepared cotton-wool discs or filter-cloths, of the nature of cotton swansdown, are employed. Wire gauze, muslin and cheese cloth remove only the coarse dirt, but the two filter materials mentioned allow only a small quantity of fine sediment to remain. In two experiments it was found that after the use of the cotton-wool filter 7·5 parts of sediment per million remained, whereas with the wire gauze filter covered with muslin 40 to 45 parts per million remained, indicating that the cotton-wool filter is about six times more efficient than the ordinary filter of gauze and muslin.

Cooling.

Another significant factor, perhaps the third in order of importance, affecting the bacterial content of the milk, not as it leaves the cowshed, but as it is delivered to the consumer, has now to be considered. This is the temperature of the milk itself.

The role of temperature in affecting the number of bacteria in milk is very striking. If milk is cooled to the temperature of 32° F. and kept at that point even for days the bacteria will not increase in number but will actually decrease to some extent. On the other hand, if the temperature of the milk is raised the growth and multiplication of the bacteria will be favoured, the extent of the multiplication depending on the increase in the temperature up to a certain point. Over this point, 100° F., multiplication begins to be checked, and still higher there is an actual decrease in the number until boiling point is reached, 212° F., when very few bacteria can survive, and those which do survive are in a resistant form called spores that ultimately succumb to continued exposure at this temperature. The result of the rapid increase in the bacteria is that the milk deteriorates by souring, the souring being more rapid at a temperature of 80° F., which may be experienced in summer, than at 65° F., which is the usual comfortable temperature of a room.

According to Conn there is not much encouragement for increase in the numbers of bacteria when the temperature rises from 32° F. to 50° F., but above that temperature the increase is very rapid, the increase being proportionate to the rise in temperature and to the time the milk is kept. For example, Conn found that milk originally containing 50,000 bacteria per c.c. when kept for 12 hours at 50° F. contained 85,000 per c.c., but when kept for 50 hours at 50° F. contained 160,000 bacteria per c.c.; on the other hand a sample of the same milk kept at 70° F. for 12 hours contained 800,000 bacteria per c.c., and for 42 hours at the same temperature the huge amount of 2,560,000,000 per c.c. Again, Park found that milk originally containing 30,000 bacteria per c.c. when kept for 24 hours at 32° F. contained the same number per c.c., when kept for the same time at 42° F. contained 43,000 per c.c., at 50° F., 89,000 per c.c., at 60° F., 900,000 per c.c., at 68° F., 4,000,000 per c.c., and at 86° F., 14,000,000,000 bacteria per c.c.

Conn furnishes an example of milk giving the following results :—

	Bacteria per c.c.
Milk drawn at 59° F.	153,000
After 1 hour	616,000
„ 2 hours	539,000
„ 4 „	680,000
„ 7 „	1,020,000
„ 9 „	2,040,000
„ 24 „	85,000,000

These examples, which could be repeated from the experiments of others, indicate the very great effect temperature and time have on the bacterial content of the milk and forcibly present to us the great necessity not only of cooling the milk at the farm but also of keeping it cool in the course of its transport, during delivery, and while in the consumer's house. They also indicate the need for cooling to as low a temperature as possible, a temperature below 50° F. being that which should be aimed at. When the initial cooling is sufficiently low milk in bulk is but slowly affected by the warmth of the external air. Here is a difficulty which cannot readily be overcome. The sources of commercial ice are as a rule so far away from our farms that either the supply is impossible or the cost is prohibitive. This difficulty could be met by the Co-operative Depot system. The milk from the farms in the surrounding districts could be collected in depots provided with refrigerating plant and cooled before being sent by road or rail to the distributors and thence to the consumers. If, however, so low a temperature as 50° F. cannot be obtained, cooling to as low a degree as possible with the materials at hand should be attempted, for, as the examples quoted show, every small amount of cooling helps the ultimate product.

We have now considered the three great factors influencing the bacterial content, and so the purity of our milk supply; pollution from the udder of the cow, pollution from dirty milk vessels and temperature. The first two are undoubtedly of great importance, but the keeping property of milk is more dependent on the temperature than upon the cleanliness. The dirty udder and the dirty pails and cans add their large measure of pollution, but temperature may increase it a thousandfold. Nothing more need be said to indicate the great significance of temperature in relation to the supply of of pure milk and to advocate the general adoption of cooling.

After an extended study of the whole question the writer is of the view that if remedial measures were adopted to combat these three great factors an enormous improvement in our milk supply would be effected. These measures may be shortly stated as (i) covered milking-pails, (ii) boiling water (steam), and (iii) cold water (ice).

Transport and Delivery.

If great care is required in dealing with milk at the place of production so also is it necessary in the course of railway transport and in the course of delivery.

First of all, it is important to have milk churns of a type which is easily cleansed, the joints and corners being reduced to a minimum, and which has a close fitting lid overlapping and protecting the lip over which the milk is poured. The churns should be of a size (10 to 12 gallons) which can be easily handled not only in cleansing but in transit, and should have no ventilating holes admitting dust or aerial contamination. Churns should be locked or sealed to ensure freedom from interference and so contamination in transit. The sale of milk by weight would avoid unnecessary measuring and manipulation.

Next, means are required for conveying the milk in a satisfactory and expeditious manner. Trains running at times convenient to meet the demands of the dairy industry are a necessity and railway vans of a suitable type are essential. In this country we possess on our railways no refrigerator vans specially reserved for milk. Milk should in every case be transmitted by rail in railway vans specially reserved for milk traffic either in special trains or attached to the ordinary passenger trains. These should be provided with a cooling device and should be kept clean in conformity with the precautions to be taken at every stage in milk handling.

When the milk passes into the hands of the wholesaler or retailer after its railway or other journey it should not be handled or poured out or treated in any way in the open street with its aerial currents of contamination, but should be taken to suitable dairy premises, specially adapted for dealing with milk, where every regard is paid to the vulnerable character of the article dealt with. At the present time it is a usual practice to strain the milk at this point and in many cases to pasteurise it, but if the milk is produced under proper conditions no straining should be necessary, and if sufficiently cooled at its source no pasteurisation should be demanded unless the delivery of the milk has been delayed. In any case whether straining or pasteurisation or both are required it is essential, especially in the warmer months of the year, for the churns of milk to be kept cool, either in a refrigerator or immersed in a trough of running water, until ready for delivery to the consumer.

Furthermore, the wholesaler or retailer has a duty to the farmer or milk producer. He should before returning the churns see they are cleansed, before souring of the remains of the milk takes place, by thoroughly washing and then sterilising by boiling water or by steam, which is usually readily available at places of delivery. This procedure serves to lessen the possibility of contamination from the churns and to minimise the labour at the farm by getting rid of the milk before it sours and is deposited on the sides.

Now we come to the method of delivery. The usual practice is for the roundsman to supply the milk by a dipping measure from a small hand-can fed from a churn on a hand-cart. Contamination may take place through the want of cleanliness of the cans or from dust in opening the can, though, unless the neglect is gross the amount is not likely to be great. He, however, like every one else dealing with milk, must be made to recognise the importance of details in the cleanly conduct of his trade.

The other method of delivery is by bottle, which before being filled with milk must be washed and sterilised by boiling water or steam, and which is afterwards sealed by paper caps or other patent stoppers. In dealing with these bottles the same care must be exercised to see that every precaution is taken to protect their contents, and to prevent abuse of the practice by the roundsman using uncleaned bottles, and caps which have been negligently handled.

Last of all, the consumer must perform his part, otherwise all the precautions taken in the earlier stages will be undone. In the house the milk should be placed in properly cleansed receptacles (again the use of boiling water is all-important), and should be protected from dust and flies by some form of cover, and from the influence of the temperature by storage in a cool pantry or cellar, or, if a cool place is not available, in some place away from contamination where the milk vessel is immersed in a basin of cold water into which cold water is allowed to trickle. The importance of care in the home cannot be exaggerated ; it is important especially in the summer time, when heat and flies combine to carry out destruction. Flies are probably the most important factor in the spread of infant diarrhœa in the summer months, and it is possible they may be the means of spread of typhoid fever, scarlet fever and diphtheria through the milk supply.

Throughout the whole course of production and delivery of the milk, individual care, sterilisation of receptacles, cooling, and proper surroundings are essential for its freedom from contamination. The vulnerability and easy destructibility of the product must be recognised at every point of its journey from the cow to the lips of the consumer.

Pasteurisation.

Pasteurisation is called for on account of the failure of the farmers to cope with the three important factors just mentioned. Milk which has had a large number of bacteria added through failure to adopt proper methods at the farm, and which has not been cooled sufficiently low, will in many cases fail to keep for the length of time which elapses before delivery to the consumer unless pasteurisation is carried out. If satisfactory methods were in operation at the farms, and if the milk were cooled to 50° F. and thereafter transported in proper refrigerator vans, and then kept in refrigerators at the distributing centres, there would be no need for pasteurisation.

There is no scientific or legal definition of pasteurisation in this country, and even amongst those who carry out the process every day there is no uniformity of temperature or time of application. Consequently the results, so far as milk is concerned, are very diverse. In many cases the process is so imperfectly applied that the keeping property of the milk, to improve which it is chiefly used, is scarcely affected. Such diverse results have been found in Denmark, in America, and, more recently, in this country, where Dr. Shaw carried out some observations for the Food Section of the Local Government Board.

As quoted by Dr. Shaw, samples of pasteurised milk taken at Birmingham contained from 1,500 to 2,518,000 bacteria per c.c. When the pasteurised milk was compared with the new milk the reduction was large in some, the greatest being 6,320,000 to 18,500, or a three-hundredth of the original amount, and small in others, the least reduction being 15,735,000 to 2,518,000, or one-sixth of the original bacteria per c.c. These varied results obtained in pasteurisation are due to the temperature at which the treatment is carried out and the nature of the apparatus. There are two kinds of apparatus employed, the "Holder" and the "Flash." The former is designed to heat the milk to a certain temperature and to retain it at this temperature for a definite length of time, usually from 25 to 30 minutes, and the latter, which is by far the most used, to heat the milk which flows through in a continuous stream, the time of the application of heat being counted in seconds, perhaps not over 60 seconds. From the dairyman's standpoint the "Flash" process is an advantage, for the apparatus is more easily cleaned, the action is continuous, and a large amount of milk can be dealt with in a short space of time, but it has the disadvantage that the temperature is difficult to maintain at a constant level without great care being taken to regulate the heating mechanism and the flow of the milk.

But the chief reason for the divergent results is the temperature employed by the operator as gauged by the thermometer at the exit pipe where the treated milk flows out of the apparatus. This has been found by the writer to vary from 140° F. to 180° F. An impression seems to exist that if the atmospheric temperature is not very high a lower temperature will suffice. It may not be a general impression, but it exists, and perhaps leads to many of the bad results experienced.

A temperature of 140° F. for "Flash" pasteurisation is too low for good results, and a temperature as near 165° F. as possible should be aimed at. Above 165° F. the cooked or scalded taste begins to be apparent and becomes more distinct the higher the temperature, so that from a commercial point of view the temperature should be kept below this. It has been found that a temperature of 165° F will kill the organisms of typhoid fever and diphtheria in a few seconds, but it is doubtful if it kills the bacillus of tuberculosis.

With the "Holder" pasteuriser a temperature of 140° F. to 150° F. acting for thirty minutes is employed. This temperature acting for this length of time kills not only the organisms of diphtheria and typhoid fever but also that of tuberculosis.

Pasteurisation at a low temperature (140° F.) has two advantages: first, there is no appreciable chemical change in the chemical constitution of the milk, and second, there is a saving in the cost of heating and cooling the milk. Cooling to a sufficiently low temperature (45° F.) is a necessary adjunct to pasteurisation, for if there is not sufficient cooling the bacteria surviving the heat will soon commence to multiply. It is the "flash" process which we find most commonly used and with it we have to see that the temperature is high enough, at or about 165° F., to give the best results.

Pasteurisation cannot be put forward as a remedy for the present condition of our milk supply. It cannot be put forward in place of cleanliness. It is a process that cannot be recommended at the farm, not merely because it is not practicable at most farms, but for the reason that far better results can be obtained at less cost by the expenditure of care and the intelligent use of cleanly methods of dairying. At the depot it is not called for if the farmer does what he should do in the way of cleanly production and if the milk is cooled. If the milk is clean when produced and cooled to a moderate extent it will not be adversely affected by the temperature of the air to any large extent unless many hours elapse before it reaches the distributor.

Where pasteurisation is required is usually at the premises of the wholesaler or distributor who, in the case of milk which has not been cooled, has to pasteurise to prevent it from deteriorating before it is delivered to the consumer. Recently, owing to difficulties in transport, pasteurisation has become freely used and it is safe to say that a very large proportion of the milk supply of London undergoes this treatment.

TUBERCULOSIS.

The control of tuberculosis in cattle is urgently demanded not only from its relationship to tuberculosis in the human being, but also in the interest of agricultural economics. So long as tuberculosis is prevalent among dairy cattle so long will there be danger to the community from tuberculous infected milk. Koch's startling announcement in 1901, that the infection of man with bovine tuberculosis was a very rare occurrence, has since been conclusively proved to be erroneous. Abundant and incontrovertible evidence has been produced since 1901 to show that human beings, and especially children, become infected with the bacillus of bovine origin, and that the chief source of this bacillus is the milk of tuberculous cows.

It has been estimated that about 25 per cent. of our dairy stock are infected with tuberculosis, and that 2 per cent. have tuberculosis of the udder. As to the milk itself, it has been found that from 9 to 10 per cent. of the mixed milks coming into our large towns are infected with the bacillus of tuberculosis, meaning that 9 to 10 out of every 100 dairy farms are providing milk which is a distinct danger to the community. The writer found that of the mixed milks coming into Shrewsbury during a period of four years, six out of seventy-three, or 8 per cent., were found to be infected.

Two methods have been proposed for the eradication of this disease, the one by Bang of Copenhagen, and the other by Ostertag of Berlin, the former being the most widely favoured.

Bang's method consists in the isolation of the diseased animals and the rearing of healthy non-infected stock. The whole stock is tested with tuberculin, those not reacting to the test forming one group, and those reacting a second group. Of the second group, the reactors, all cows suffering from tuberculosis of the udder and all "wasters" are slaughtered, while the others are permanently isolated in a separate building, or if this is impossible, in a part of the cowshed completely shut off from that part where the first group or healthy stock is to be kept. Separate grazing fields are provided for the two groups so that at no time are the diseased animals allowed to mix with the healthy.

The calves of the diseased cows are separated from their mothers immediately after birth and placed in non-infected premises where great care is taken to prevent their being infected by feeding them on the raw milk of healthy cows or on milk coming from reacting animals after it has been heated to 180° F. Bang has found that very rarely is the calf of a tuberculous mother infected at birth.

Half-yearly testing by tuberculin is employed for the non-reacting stock, and should any give a reaction, they are isolated with the other reactors. Should the permanent stock be replenished non-reactors only should be added.

This method has proved successful in many farms in Denmark and has been inaugurated in Birmingham, where the Council supply free tuberculin and veterinary assistance to those farmers in the city who are prepared to carry out the method as directed.

In Ostertag's method the cows with "open" tuberculosis, in other words, those which give off tubercle bacilli and are therefore a source of danger, are separated from the others and slaughtered. These cases are diagnosed by means of regular veterinary inspection and bacteriological examination of the milk. Open tuberculosis can only be diagnosed by veterinary inspection and bacteriological examination, tuberculin being useless for the purpose on account of its being a diagnostic test of all forms of tuberculosis.

This method strikes one by its incompleteness. Cases are only dealt with when they are actually found to be markedly affected or a danger by the presence of tubercle bacilli in the milk. The infection of one animal by another is not under control, and while the danger of tuberculous milk may be lessened the method does not to any extent deal with the large question of the complete eradication of the disease from the dairy herds. Bang's method succeeds where Ostertag's fails, for its ultimate object is to secure a non-tuberculous stock. There is a certain amount of expense and there may be some difficulty in the adoption of the Bang system, but the expense is not great, and if vigilance is exercised by the farmer the results will amply repay the cost. The State or municipality could assist greatly by the provision of free tuberculin testing and veterinary assistance where there is a genuine offer on the part of the farmer to adopt the method.

The Tuberculosis Order of June 23, 1914, which has been suspended since the outbreak of war in August, 1914, to all intents and purposes enforces a modified Ostertag method. It requires the notification by any person having in his possession or under his charge of (1) any cow suffering from tuberculosis of the udder, indurated udder or other chronic disease of the udder, (2) any bovine animal which is, or appears to be, suffering from tuberculous emaciation, or (3) any bovine animal suffering from a chronic cough and showing definite clinical signs of tuberculosis; and by a veterinary surgeon who in private practice finds any bovine animal suffering from tuberculosis of the udder, or tuberculous emaciation or suffering from a chronic cough and showing definite clinical signs of tuberculosis. It provides for the examination of such animals by the Veterinary Inspector of the Local Authority, who, with the consent of the owner of the animal, can apply the tuberculin test, and for the sampling of the milk and for the taking of other specimens for testing.

The Order directs that milk from such cows should not be mixed with other milk, that all milk from them should be boiled, and that the vessel containing such milk should be sterilised before any other milk is placed in it. It further requires the isolation of such animals until they are dealt with under the Order by examination at the hands of the Veterinary Inspector.

The tuberculin test has got beyond the experimental stage and in experienced hands has proved to be of the greatest value in the diagnosis of tuberculosis. Through its application by inexperienced persons and through its early failures the tuberculin test met with undeserved opposition from many farmers. But now that the essentials of the test are better known and the interpretation of the results more clearly recognised the prejudice against the test should soon be overcome. By its means, as already indicated, the farmer can learn exactly the condition of his herd and is then in a position to take steps to improve it. But the test, to remain a success, and to prevent it from being used for less reputable purposes than the diagnosis of the disease, should be solely in the hands of experienced veterinarians. It should not be possible for any person to secure tuberculin and apply the test to enable him to prevent the test from being effective at a later date when applied for a proper purpose.

LEGAL ENACTMENTS, ORDERS AND REGULATIONS.

The Dairies, Cowsheds and Milkshops Orders of 1885, 1886 and 1899 still regulate the management of the places where milk is produced and sold, the Milk and Dairies (Consolidation) Act, 1915, not yet having been put into force. By this Act the Dairies, Cowsheds and Milkshops Orders are repealed.

The Milk and Dairies Act has to come into operation on a date not later than the expiration of one year after the termination of the War as the Local Government Board (now the Ministry of Health) shall appoint. As the termination of the War has not yet been defined no idea can be given as to the date of its coming into operation. In any case the Act requires to be clothed not only with actuality but also with Orders which will apply to the whole country. The first section provides for the making of general and special Orders for many purposes connected with dairying, and until these are issued one cannot say what effect they will have on the dairy industry. But of one thing we may be certain, and that is, that no amount of legislation will suffice to make our milk supply a satisfactory and pure one unless the farmer and all those dealing with or handling milk not only become informed of the proper methods of production and handling but also recognise and practise those precepts which it is desired to inculcate. Pure milk must be recognised to be not solely a question of legislation but also a matter of personal care.

Sanitary Inspectors themselves are also in need of instruction in the proper methods of dairying, and if the Score Card is adopted for purposes of inspection, they should be able with facility to appraise each item at its proper value. The Inspectors should go out as instructors in cleanly methods and should be able to act as such without meeting with the resentment of the milk producers. The Score Card cannot of itself indicate the production of clean milk, but it can be the means of educating the farmer and of encouraging or stimulating his servants, provided there is uniformity of marking by the Inspectors throughout the country. The Score Card aims at giving marks at each inspection not only for lighting, ventilation and other attributes of the cowshed itself, but also marks for the milking pails, cleanliness of cows, method of cleansing utensils, cooling and other factors in the production of clean milk.

The Milk and Dairies Act makes provision for dealing with tuberculous milk, including the steps to be taken in sampling and in stopping the milk supply when infected. It becomes obligatory for the Councils of County Boroughs and Counties (not Rural or Urban District Councils) to take action with regard to tuberculous milk produced in their areas. The Act provides for the appointment of Veterinary Inspectors by Local Authorities, and stipulates that any inspection of cattle made in pursuance of the Act shall be carried out by a Veterinary Inspector or a properly qualified veterinary surgeon.

Although most of the duties under the Act are placed upon the Local Authorities at present carrying out the Dairies, Cowsheds and Milkshops Orders, some new and special duties are placed upon the County Council. At the same time also there is a provision that if a Local Authority fails to fulfil any of its duties under the Act, or under any Milk and Dairies Order made under the Act, the Ministry of Health may, after holding a local inquiry, compel the authority to fulfil its duties, and if the authority in default is a District Council the duties may be transferred to the County Council.

It is not possible at present to consider even cursorily all the important provisions of the Act, but a general indication has been given of some of the important changes which will make for better administration of the law with respect to the production and handling of milk.

In conclusion, may it not be urged that the importance of a pure and plentiful milk supply is so vital to national well-being that the subject of research work in dairying should receive a much larger measure of support from public and private sources? At one time almost the only information was the result of foreign research, and it was not until 1912 that a national centre for research in dairying was established by the Board of Agriculture. Even now, however, it is handicapped in its work by the lack of adequate equipment, both of laboratories and of farms, for the proper conduct of investigations on a scale at all commensurate with the importance of the subject, and it is much to be hoped that both the State and the Dairy Industry will realise their responsibility to the public in a fuller degree, and by joint action will secure that the many problems awaiting investigation, problems which are beyond the scope of the general scientific research institution, may be taken up and examined under the best possible conditions.

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PRICES OF FARM PRODUCE AND WAGES OF FARM WORKERS.

THE relation of prices of farm produce to the wages of farm workers is one which constantly attracts attention. In many instances the prices dealt with in the discussions of the subject are those of cereals, and quite frequently the price of wheat only is considered. The prominence of the price of wheat in this and in some other connections appears to be due largely to political considerations, or at least to the importance attached to the wheat supply from the point of view of the economic security if not the military security of the nation. It is difficult to find a period, except that between 1795 and 1815, in which the actual financial importance of wheat to the farmer was even approximately equal to the importance given to its price in the general consideration of the financial condition of the industry, and in the particular consideration of what the rates of wages of farm workers might or should be. The period 1870 to 1875 is generally regarded as the one in which cereal production reached its highest importance in modern times, yet it is probable that the receipts from wheat in this period did not represent much more than 20 per cent. of the total receipts from the sale of farm produce, and that the total receipts from all cereals did not represent more than 40 per cent. of the total receipts of farms. This cannot be exactly determined because of the lack of accurate data on farm production prior to the beginning of this century, but the figures given do not err on the side of depreciating the importance of cereal crops.

In recent years the proportion of total receipts obtained from the sales of cereals has been much lower. In the Report on the Agricultural Output of Great Britain, 1908, figures are given for the estimated value of farm products in England and Wales, and here "farm crops" (which includes other crops besides cereals) represent only 31 per cent. of the total, while animal products (meat, milk and wool) represent over 60 per cent. If it is objected that the foundation of these figures is somewhat weak it can be shown that the general result of other inquiries is to corroborate the figures. A Committee of the Agricultural Wages Board examined the sources of receipts on 26 "tenant" and 21 "home" farms for the five years 1913-14 to 1917-18 and it was found that receipts from "corn and other crops" amounted to 25 per cent. of the total receipts on the "tenant" farms, and only 15 per cent. on the "home" farms.[1] The tenant farms were both larger and had a higher percentage of land under the plough than the averages for England and Wales. For the year 1918-19 some 325 accounts were collected in Great Britain by the Agricultural Costings Committee for the Royal Commission on Agriculture and these show that of the total income less than 30 per cent. was from "corn, hay, straw and roots," while 64 per cent. was obtained from "live-stock," and "milk and dairy produce."[2] Some of the accounts from which these total figures were obtained are situated in Scotland, but the proportions on the farms situated in England do not show any important variations. On tenant farms in England 31 per cent. of total income was derived from sales of corn, hay, straw and roots, while 61 per cent. was derived from live-stock and milk and dairy produce. On home farms in England and Wales the respective proportions were found to be 25 and 65 per cent. Similarly, in a group of accounts collected for the National Farmers' Union by Mr. James Wyllie, the highest percentage of receipts from "crops" in 1913-14 was 32·5, and in 1917-19, 44·5; but even in the later years the average proportion would scarcely exceed 35 per cent. On the information available it may be said that the prices of cereals have a much less important influence on the remuneration of the farmer and of the labourer than is indicated by the prominence given to these prices in the discussions of the financial condition of agriculture.

Ever since Thorold Rogers published *Six Centuries of Work and Wages* in 1884, it has been a somewhat common practice to try to illustrate changes in the economic position of the farm labourer, by the quantities of wheat which could be purchased by his daily or weekly wages at various periods. But before this Sir James Caird had used this method, following on the lines of other historians. "The general condition of the agricultural labourer was probably never better than it is at the present (1880). Compared with that of 300 years ago, in the time of Queen Elizabeth, wages have risen sixfold, while the price of bread has only doubled. Two centuries later, in 1770, the farm labourer's wage was 1*s.* 2*d.* a day, when the price of wheat was 46*s.* a quarter. In 1846, immediately before the repeal of the Corn Laws, wages were 1*s.* 7*d.* when wheat was 53*s.* At the present time wages have risen 60 per cent., while wheat has diminished in price. In other words, the labourer's earning power in procuring the staff of life cost him five day's work to pay for a bushel of wheat in 1770, four days in 1846, and two and a half days in 1870."[1]

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[1] Report on the Financial Results of the Occupation of Land, &c. Cd. 76, 1919.

[2] Royal Commission on Agriculture. Cmd. 445, page 31, Table 9.

Thorold Rogers used this method of assessing the changes in the prosperity of agricultural workers on several occasions, but rarely so definitely as when he was dealing with the period 1580 to 1660. He then gave the following portions of a quarter of wheat which could be obtained by an artisan and a farm worker with the cash wages of one day's work :

	Artisan.	Ordinary Labourer.[2]
Before 1580	$\frac{1}{12}$	$\frac{1}{18}$
1581—1590	$\frac{2}{41}$	$\frac{2}{61}$
1591—1600	$\frac{1}{32}$	$\frac{1}{48}$
1601—1610	$\frac{2}{59}$	$\frac{2}{88}$
1611—1620	$\frac{4}{139}$	$\frac{4}{208}$
1621—1630	$\frac{2}{75}$	$\frac{2}{112}$
1631—1640	$\frac{1}{43}$	$\frac{1}{64}$
1641—1650	$\frac{1}{46}$	$\frac{1}{69}$
1651—1660	$\frac{2}{63}$	$\frac{2}{88}$

But the most illuminating study of this kind extending over a long period of time is that made by Mr. H. O. Meredith, in which he charts the variations in the amount of wheat purchasable with the daily wage of an agricultural labourer from A.D. 1275 to 1890.[3] This indicates that the periods of worst poverty of the farm labourer were, approximately, from A.D. 1275 to 1325, 1590 to 1650, and 1749 to 1840; the lowest points being touched about 1280, 1320, 1620, 1800 and 1820. The periods in which the highest prosperity is indicated are A.D. 1440 to 1510, 1560 to 1575, 1725 to 1750, and 1850 to 1890. The study of both the late Professor Thorold Roger's various statements and of Mr. H. O. Meredith's chart does show, in so far as reliance may be placed upon their data, that there has been no correspondence between the prices of wheat and wages of farm labour over long periods of time.

But again the question as to the importance of wheat prices arises; and it arises in greater force in relation to the remuneration of the farm worker than to the financial prosperity of the industry as a whole. There is considerable disagreement amongst historians as to whether the bread of the English peasantry was mainly composed of wheat or rye, but it is certain that in times of scarcity and high prices of wheat other bread-stuffs were used by the poor, and they appear to have been used without any of the bitter complaints which would have been made had the normal breadstuff been pure wheaten flour. From statements of Harrison, Sir Edward Coke, and Henry Best, it is clear that rye was an important breadstuff in the sixteenth and seventeenth centuries. During the periods in which means of transport were poor, and commerce was entirely local, it is probable that the chief constituent of bread would vary to some extent with the produce of the district, as well as with the condition of the harvest. For instance, Charles Smith, writing in 1766, was of opinion that wheat formed the greater portion of the breadstuffs eaten in the southern and midland counties of England, barley the major portion of those eaten in Wales, and rye with oats formed about two-thirds of the breadstuffs used in the Northern counties.[1] Arthur Young's account of the variations in the breadstuffs which he found in different districts some years later supplies some corroboration of Smith's statements. And Smith states definitely that "bread made of wheat is become much more generally the food of the common people since 1689, than it was before that time, but it is still very far from being the food of the people in general."[2] That cereals other than wheat were used for making bread during the Napoleonic wars needs no special demonstration, so it would appear that the farm workers were well acquainted with bread other than that made wholly of wheaten flour in the early part of the nineteenth century.

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[1] Caird. *The Landed Interest*, 1880, page 65.

[2] *Six Centuries of Work and Wages.* 1908 Ed., page 427.

[3] *Pitman's Economic History of England.* Appendix, Chart B.

Had this not been so, the prosperity of the farm workers could not be measured solely by the prices of wheat, or even of all the cereals, for they must have spent a portion of their incomes on other foods, besides a considerable portion on other necessaries of life. It may be urged that the changes in the prices of these other necessaries would correspond with those in the prices of cereals, but this would only be the case when there was a general alteration in the level of prices due to changes in the value of money. In particular, it may be urged that the changes in prices of foods other than bread would correspond with the changes in cereal prices. But such a contention assumes that the forces affecting the prices of other foods, *e.g.*, meat, are exactly the same as those affecting prices of breadstuffs. For this assumption there is little foundation, epecially before the comparatively modern period in which the intensive production of meat by the use of artificial feeding stuffs has been practised. In the absence of detailed information on prices it is dangerous to make assertions on this subject, but it appears probable that close correspondence between prices of various types of farm produce would be shown only when movements were due to changes in the value of money. Even when increases or decreases in prices are due to this work to pay for a bushel of wheat in 1770, four days in 1846, and two and a half days in 1870."[1]

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[1] Charles Smith. *Three Tracts on the Corn Trade and Corn Laws.*

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But again the question as to the importance of wheat prices arises ; and it arises in greater force in relation to the remuneration of the farm worker than to the financial prosperity of the industry as a whole. There is considerable disagreement amongst historians as to whether the bread of the English peasantry was mainly composed of wheat or rye, but it is certain that in times of scarcity and high prices of wheat other bread-stuffs were used by the poor, and they appear to have been used without any of the bitter complaints which would have been made had the normal breadstuff been pure wheaten flour. From statements of Harrison, Sir Edward Coke, and Henry Best, it is clear that rye was an important breadstuff in the sixteenth and seventeenth centuries. During the periods in which means of transport were poor, and commerce was entirely local, it is probable that the chief constituent of bread would vary to some extent with the produce of the district, as well as with the condition of the harvest. For instance, Charles Smith, writing in 1766, was of opinion that wheat formed the greater portion of the breadstuffs eaten in the southern and midland counties of England, barley the major portion of those eaten in Wales, and rye with oats formed about two-thirds of the breadstuffs used in the Northern counties.[1] Arthur Young's account of the variations in the breadstuffs which he found in different districts some years later supplies some corroboration of Smith's statements. And Smith states definitely that "bread made of wheat is become much more generally the food of the common people since 1689, than it was before that time, but it is still very far from being the food of the people in general."[2] That cereals other than wheat were used for making bread during the Napoleonic wars needs no special demonstration, so it would appear that the farm workers were well acquainted with bread other than that made wholly of wheaten flour in the early part of the nineteenth century.

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[2] In opposition to the idea that rye was the staple bread-stuff of the English peasantry see *Social England*, Vol. II, page 370.

A study of the dietary of farm labourers in England and Wales made by Dr. Edward Smith[2] in 1863 does not distinguish between foods received as allowances and those purchased out of cash wages. It does, however, add other testimony to the fact that wheaten flour, even at this date, was not the sole breadstuff used by English farm workers. Barley was still used in the North of England, and in Cornwall and Devon; but it was said that its use in Northumberland was diminishing. Maslin—a mixture of rye and wheat—was used in Yorkshire and Northumberland. This was prepared in two forms, being mixed in the proportions of two of wheat to one of rye after being grown separately, or grown together, as a mixture. In the latter cases proportions varied considerably, and on the lighter lands rye predominated. Oatmeal was also used in some localities. But one of the most interesting facts brought out by Dr. Smith was that where wheat flour was the chief breadstuff the quality was almost universally that of "seconds." Some whole wheat-meal was also used.

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[1] Cp. Davies: *Case of the Labourers in Husbandry.* Eden: *State of the Poor.*

[2] Sixth Report of the Medical Officer to the Privy Council, 1863 (3416. 1864). Report by Dr. Edward Smith on the Food of the Labouring Classes; Farm Labourers, page 234 and fol.

The value of food consumed by over 500 families in England bore a proportion to the total family income of 50 per cent. upwards. Indeed, the value of food sometimes exceeded the total income, but this is due to allowances and to home-grown supplies. The tables have not been averaged because of the complications involved, but on the whole the proportion of the value of food to total income would not exceed 80 per cent. The average consumption of cereals (including rice) in terms of bread was found to be 12½ lb. per week per adult, or 55¾ lb. per week per family. The consumption of meat was 1 lb. per head, or about 4½ lb. per family. That of sugar was just about 2 lb. per family; and of fats (butter, dripping, lard, suet) just over 2½ lb. per family. Meat in some form was consumed by 99 per cent., sugar (as sugar or treacle) by 98 per cent., and fats by 99 per cent. of the families. Tea was consumed by 99 per cent. of the families. The consumption of cheese amounted to about 2 lb., and of milk about 7½ pints per family per week. Although it is difficult to state the proportion of the total value of food represented by the value of breadstuffs it may be said that it must have been much higher than that prevailing at the beginning of the twentieth century, when the average consumption of bread amounted to about 40 lb. per family. The consumption of meat at the beginning of the twentieth century amounted to over 7 lb. per family per week. But in any case it is evident that the prosperity of the farm labourers during the later part of the nineteenth century was not to be measured in the prices of breadstuffs alone.

In 1902 the position had entirely changed, for Mr. Wilson Fox[1] found that the average dietary of farm workers cost 13*s.* 6½*d.* per week, while bread and flour cost only 3*s.* 5*d.* and meat cost 4*s.* 2*d.* The total average expenditure per family was 20*s.* 3*d.* so that the expenditure on bread represents only 16 per cent. of the total, and bread and meat together represent only 37 per cent. of the total expenditure, including fuel and light, clothes, insurances, and rent. In 1918 the total expenditure of an average family was estimated to be about 46*s.* 6*d.*, of which nearly 29*s.* was spent on food.[2] The expenditure on bread and flour, &c., was 7*s.* 4*d.*, and on meat and similar foods 9*s.* 6*d.* Thus the expenditure on bread and flour amounted to about 16 per cent. of the total, and to about 25 per cent. of that on all foods. The expenditure on meat represents about 20 per cent. of the total expenditure, and about 33 per cent. of that on all foods. Taking bread, flour, &c., and all meats together the expenditure on these items represents 58 per cent. of the total on foods, and 36 per cent. of the expenditure on all items.

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[1] Report on Wages, Earnings and Conditions of Employment. Cd. 2376, pp. 226 and fol.

[2] Report on Financial Results of Occupation of Land, &c. Cd. 76, 1919, page 37, and App. X.

It is clear from the earlier figures that the influence of prices of cereals on the economic condition of the farm labourer has not been so great, at least in modern times, as has frequently been insinuated by the measurement of this economic position by the quantity of cereals which could be purchased by the daily or weekly wage. But it is also clear that the influence of the prices of cereals, or at least of breadstuffs, on the economic position of the farm labourer as a purchaser has been diminishing during the nineteenth and twentieth centuries. By estimating the quantity of wheat and meat necessary to maintain a family of five persons Mr. G. F. Steffen has indicated how the portion of the daily wage of a farm labourer necessary to purchase a sufficient supply of these articles varied during the nineteenth century.[1] The figures here given start at one of the periods in which the poverty of the labouring class was quite marked.

Periods of ten years.	Daily wages of an agricultural labourer. s.	d.	Percentage of wage required for buying 6 lb. 14 oz. wheat and 1 lb. 8 oz. meat.
1831—40	1	8	93
1841—50	1	9	82
1851—60	1	11	75
1861—70	2	1	70
1871—80	2	5	65
1881—90	2	2½	58

From the figures given it is clear that neither the economic position of the farmer, nor that of the labourer as a purchaser, is determined by the prices ruling for cereal products; and that changes in their economic positions cannot be measured by changes in these prices. It is, however, true that the proportion of the labourer's wages spent on food has varied inversely with changes in the rates of real wages, *i.e.*, the amount of the necessaries of life which can be purchased with the cash wage received. It is also true that the proportion of the wages spent on breadstuffs rises more rapidly than the total proportion on foods when real wages are falling, either as a result of falling rates of cash wages or of rising prices. But this of itself is an indication that wages do not necessarily rise or fall with similar movements in the prices of cereal breadstuffs over a long period of time.

Dealing more closely with the relation of cash wages to the prices of farm products a considerable difficulty is encountered in the collection of prices other than those of cereals, or even of rates of wages, for a continued series of years. The following table shows the average rate of wages of ordinary agricultural labourers at various dates since 1767, as given by Dr. Hasbach, Mr. Wilson Fox,[1] and more recent investigators :—

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[1] See *Nineteenth Century*, No. 196, June, 1893. "Six Hundred Years of English Poverty." G. F. Steffen.

Year	Authority	Average weekly rate of wages s.	d.
1767—70	Arthur Young	7	3
1850—51	James Caird. *English Agriculture.* 1850—51	9	7
1860	Purdy. *Journal R.S.S.* 1861	12	3
1870—71	Druce. Journal R.A.S.E. 1885	12	2
1880—81		14	2
1892—93	W. C. Little. Royal Commission on Labour	13	5
1898	Wilson Fox. Cd. 346	14	5
1902	Wilson Fox. Cd. 2376	14	8
1907	Board of Trade. Cd. 5460	14	9
1912	Central Land Association	16	9
1912—13	Rural League	17	0
1914	*Board of Trade Labour Gazette*	15	10
	Board of Agriculture Investigators. Cd. 24	16	3
1917	*Board of Trade Labour Gazette*	22	3
	Board of Agriculture Investigators. Cd. 24	22	11
1918	" " "	27	1
	Minimum Rate	30	0

Now if these rates of wages are set alongside the prices of wheat, barley and oats for the periods to which they relate it will be seen that there is little correspondence between the movements in wages and prices of British cereals and of bread.

From 1765 to 1770 the highest and lowest prices for wheat were 59*s.* 1*d.* and 41*s.* 10*d.* respectively, while wages were about 7*s.* 3*d.* per week ; but a century later, when prices were slightly lower, wages were 67 per cent. higher. Again, wages in 1892-3 show some increase over those ruling in 1870, although cereal prices had suffered a considerable decline, and they continued to rise in subsequent years when cereals were falling to some extent.

Other estimates of wages in the eighteenth and nineteenth centuries have been prepared by Professor A. L. Bowley.[2] In this case some of the rates are taken from the sources which have

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[1] Hasbach, *English Agricultural Labourer*, page 224. Wilson Fox, Cd. 2376. Report on Wages and Earnings in Agriculture, 1907, Cd. 5460. For the years since 1902 a convenient summary is provided by the Report on Financial Results of the Occupation of Land, Cd. 76, 1919, pp. 23—24 ; but the Reports of the Central Land Association and Rural League should also be consulted.

[2] *Journal of the Royal Statistical Society*, Vol. LXI. Pt. 4, 1898. "Agricultural Wages."

Rates of Cash Wages, Prices of Wheat, Barley and Oats, and Bread.

Average rates of wages of ordinary agric. labourer			Average prices of							Mean price of bread in London, per 4 lb.
Year	Rate		Wheat per qr.		Barley per qr.		Oats per qr.		Year	
	s.	d.	s.	d.	s.	d.	s.	d.		d.
1767—70	7	3	49	6	—		—		1765	—
			44	5	—		—		1766	—
			59	1	—		—		1767	—
			55	5	—		—		1768	—
			41	10	—		—		1769	—
			44	10	—		—		1770	—
			48	7	26	5	17	2	1771	—
1850—51	9	7	44	3	27	9	17	6	1849	7·0
			40	3	23	5	16	5	1850	6·8
			38	6	24	9	18	7	1851	6·8
			40	9	28	6	19	1	1852	6·8
1860	12	3	44	2	34	8	24	6	1858	7·5
			43	9	33	6	23	2	1859	7·8
			53	3	36	7	24	5	1860	8·8
			55	4	36	1	23	9	1861	9·0
			55	5	35	1	22	7	1862	8·5
1870—71	12	2	63	9	43	0	28	1	1868	9·3
			48	2	39	5	26	0	1869	7·8
			46	11	34	7	22	10	1870	8·0
			56	8	36	2	25	2	1871	9·0
			57	0	37	4	23	2	1872	9·8
1880—81	14	2	46	5	40	2	24	4	1878	7·5
			43	10	34	0	21	9	1879	7·1
			44	4	33	1	23	1	1880	7·0
			45	4	31	11	21	9	1881	7·0
			45	1	31	2	21	10	1882	7·4
1892—93	13	5	31	11	28	8	18	7	1890	6·0
			37	0	28	2	20	0	1891	6·2
			30	3	26	2	19	10	1892	6·2
			26	4	25	7	18	9	1893	5·8
			22	10	24	6	17	1	1894	5·4
1898	14	5	26	2	22	11	14	9	1896	5·1
			30	2	23	6	16	11	1897	5·5
			34	0	27	2	18	5	1898	6·0
1902	14	8	25	8	25	7	17	0	1899	5·1
			26	11	24	11	17	7	1900	5·2
			26	9	25	2	18	5	1901	5·0
			28	1	25	8	20	2	1902	5·3
1907	14	9	29	8	24	4	17	4	1905	5·5
			28	3	24	2	18	4	1906	5·5
			30	7	25	1	18	10	1907	5·4
			32	0	25	10	17	10	1908	5·8
1912	16	9	36	11	26	10	18	11	1909	6·1
1912—13	17	0	31	8	23	1	17	4	1910	5·9
			31	8	27	3	18	10	1911	5·5
			34	9	30	8	21	6	1912	5·8
			31	8	27	3	19	1	1913	5·8
1914	16	0	34	11	27	2	20	11	1914	5·8
			52	10	37	4	30	2	1915	—
			58	5	53	6	33	5	1916	—
1917	22	6	75	9	64	9	49	10	1917	—
1918	28	6	72	10	59	0	49	4	1918	—
1919	36	6	—		—		—		1919	—

[N.B.—Wages are from preceding Table, striking means where necessary. Prices of cereals from Appendix of *English Farming, Past and Present* (1765—1770), from Cd. 3653, 1907, and Cmd. 375, 1919; prices of bread from Seventeenth Abstract of Labour Statistics, Cd. 7733, 1915.]

previously been quoted, but rates from some other sources are also included. Prices of cereals have again been tabulated with Professor Bowley's estimates of the rates of wages, and again the general results show little correspondence between wages and prices.

Average Rates of Wages as collected by Prof. A. L. Bowley, with Prices of Cereals for corresponding and preceding year in each instance.

Wages		Prices per quarter			
Years	Rates	Year	Wheat	Barley	Oats
	s. d.		s. d.	s. d.	s. d.
1767—70	7 2	1767	59 1	—	—
		1768	55 5	—	—
		1769	41 10	—	—
		1770	44 10	—	—
1795	8 11	1794	52 3	31 9	21 3
		1795	75 2	37 5	24 5
1824	9 7	1823	53 4	31 6	22 11
		1824	63 11	36 4	24 10
1833	10 6	1832	58 8	33 1	20 5
		1833	52 11	27 6	18 5
1837	10 3	1836	48 6	32 10	23 1
		1837	55 10	30 4	23 1
1850	9 6	1849	44 3	27 9	17 6
		1850	40 3	23 5	16 5
1860	11 7	1859	43 9	33 6	23 2
		1860	53 3	36 7	24 5
1861	11 7	1861	55 4	36 1	23 9
1867—68	12 4	1867	64 5	40 0	26 0
		1868	63 9	43 0	28 1
1869—70	12 7	1869	48 2	39 5	26 0
		1870	46 11	34 7	22 10
1872	14 10	1871	56 8	36 2	25 2
		1872	57 0	37 4	23 2
1880	13 7	1879	43 10	34 0	21 9
		1880	44 4	33 1	23 1
1892	13 5	1891	37 0	28 2	20 0
		1892	30 3	26 2	19 10

From 1880 onwards it is possible to obtain continuous information on the changes in wages and the prices of farm products. This is provided by the various Abstracts of Labour Statistics prepared by the Board of Trade.[1] The method used is that of index numbers, by which prices and wages over a series of years are quoted in terms of 100 from the prices ruling in the base year, which is 1900 A.D. For instance, in the case of wheat the average price in 1900 was 26*s.* 11*d.* per quarter, which is taken at 100, while in 1880 it was 44*s.* 4*d.* per quarter which is quoted as 164·7, and in 1913 it was 31*s.* 8*d.* per quarter which is quoted as 117·7. But further information can be obtained from other sources.

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[1] For this purpose the Seventeenth Abstract, (Cd. 7733, 1915) has been used. Wages, page 67; Meat and Milk, page 94; Cereals, page 91; British Wool, page 90; Retail prices in London, page 102.

The most striking case of correspondence between rates of wages and prices of wheat is that found by Mr. Wilson Fox in the Eastern Counties in 1902. Taking the wages on six farms situated in the Eastern Counties, and the average prices of wheat, he obtains the results shown in Fig. 1. The base year used in this case is 1893.

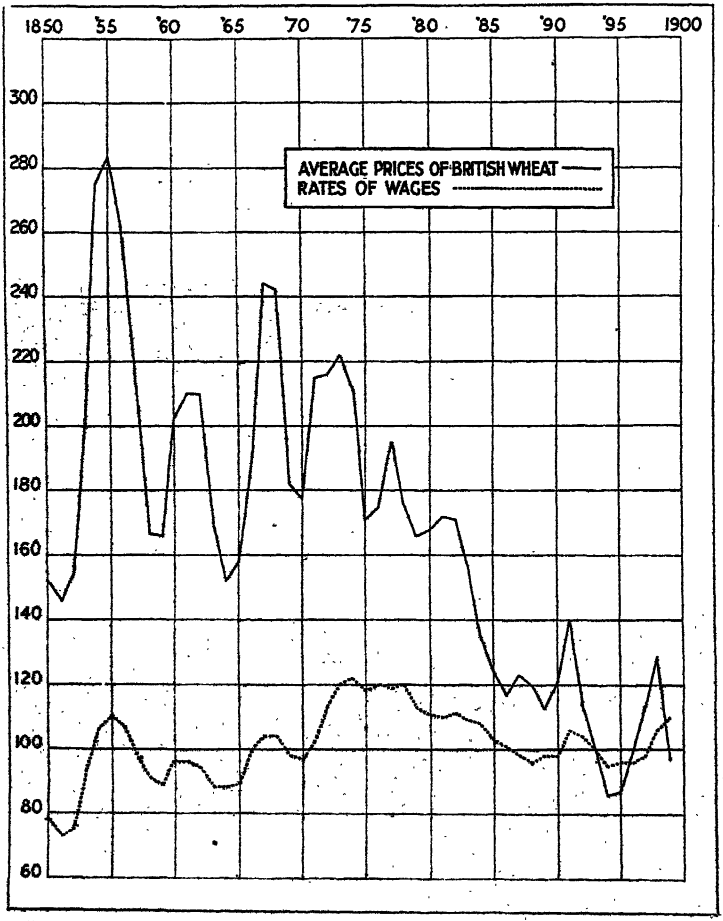

FIG. 1.—Prices of Wheat and Rates of Cash Wages in the Eastern Counties of England, 1850 to 1898.

It has not been possible to obtain a continuous series of figures for wages since 1898, but taking the average prices of wheat, barley and oats, and the average rates of wages for the six Eastern Counties (Huntingdon, Cambridge, Lincoln, Norfolk,

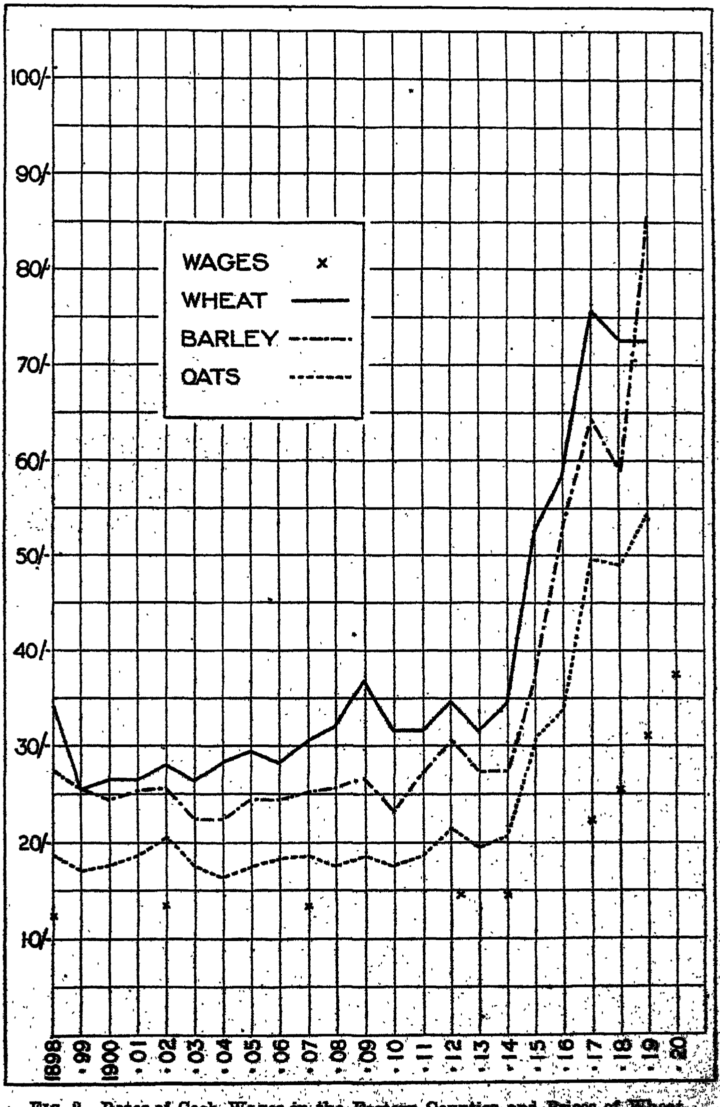

FIG. 2.—Rates of Cash Wages in the Eastern Counties, and Prices of Wheat, Barley and Oats, 1898–1919.

Suffolk and Essex), the results as shown in Fig. 2 are obtained. The results are shown in shillings per quarter and per week.

The data are weak in some respects in both cases, so comment is undesirable; but as these figures show the closest correspondence between wages and cereal prices that has been discovered,

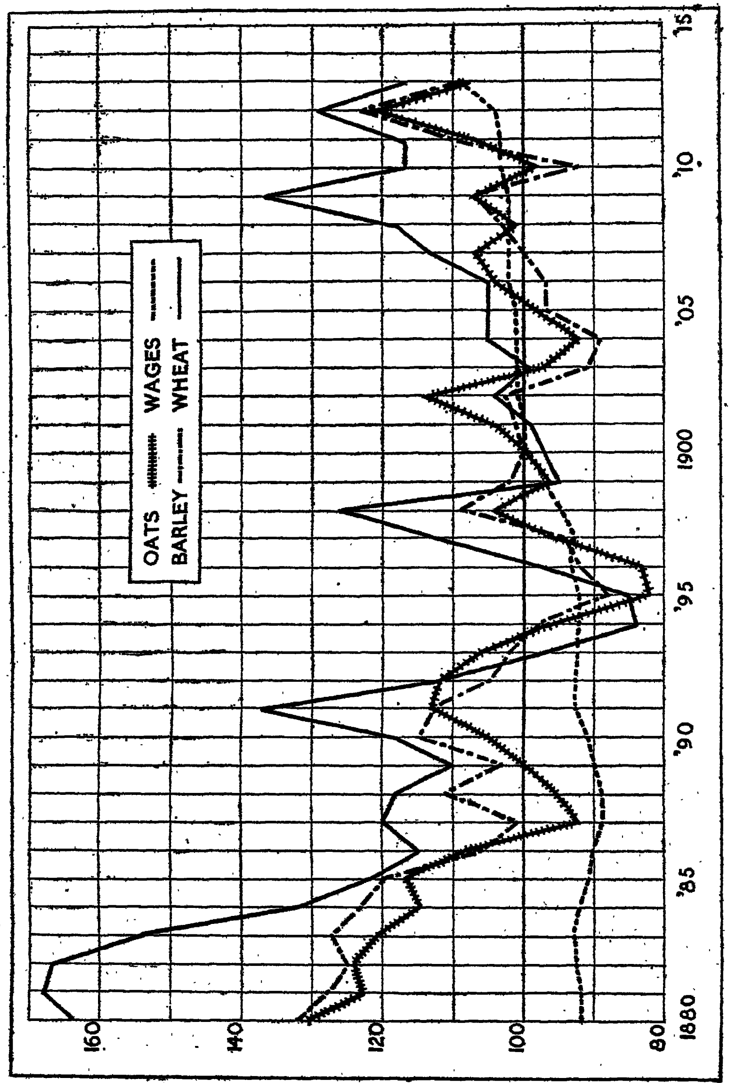

FIG. 3.—Movements in Prices of Wheat, Barley and Oats, and in Cash Wages of Ordinary Agricultural Labourers, 1880 - 1913.

their inclusion appeared to be necessary. It may be thought, however, that the correspondence between wages and prices of corn shown in these figures is due to the importance of the corn

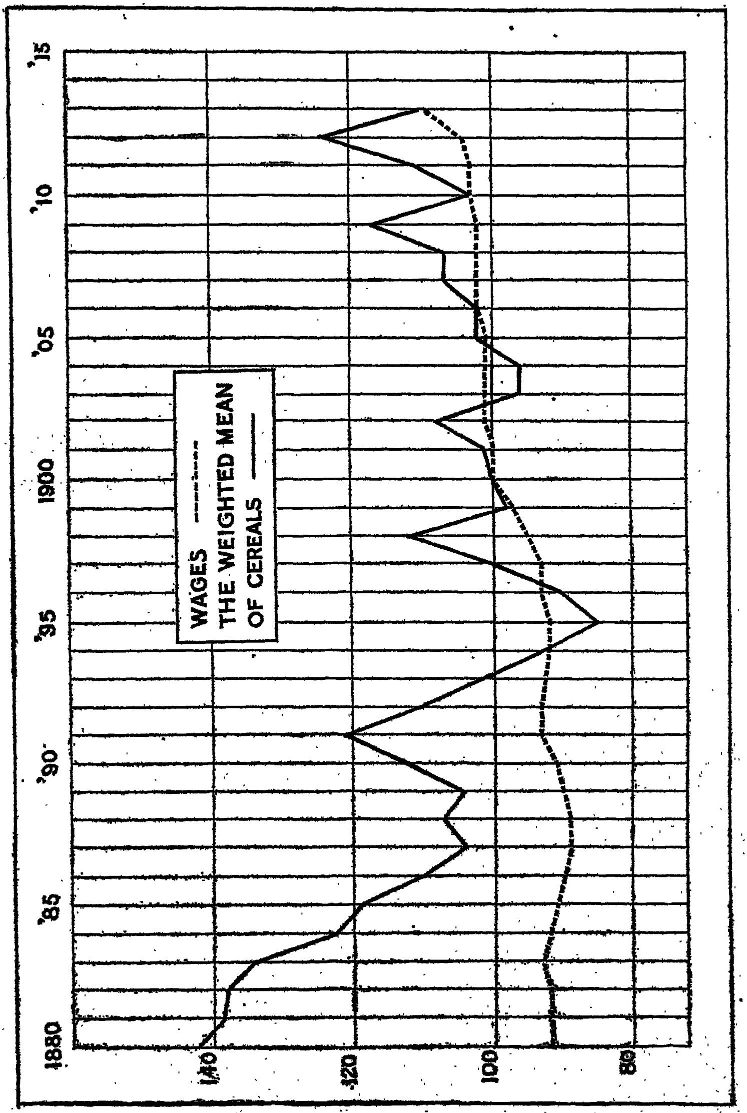

FIG. 4.—Changes in the Weighted Index Numbers of Prices of Wheat, Barley and Oats, 1880—1913.

crops and their prices in the economy of farms in this area. It is unfortunate that little detailed information is available on the sources of receipts on farms situated in the Eastern Counties, but it is known that on some farms with 70 out of each 100 acres under the plough the receipts from live-stock and their products represent more than one half of the total receipts from all sources.

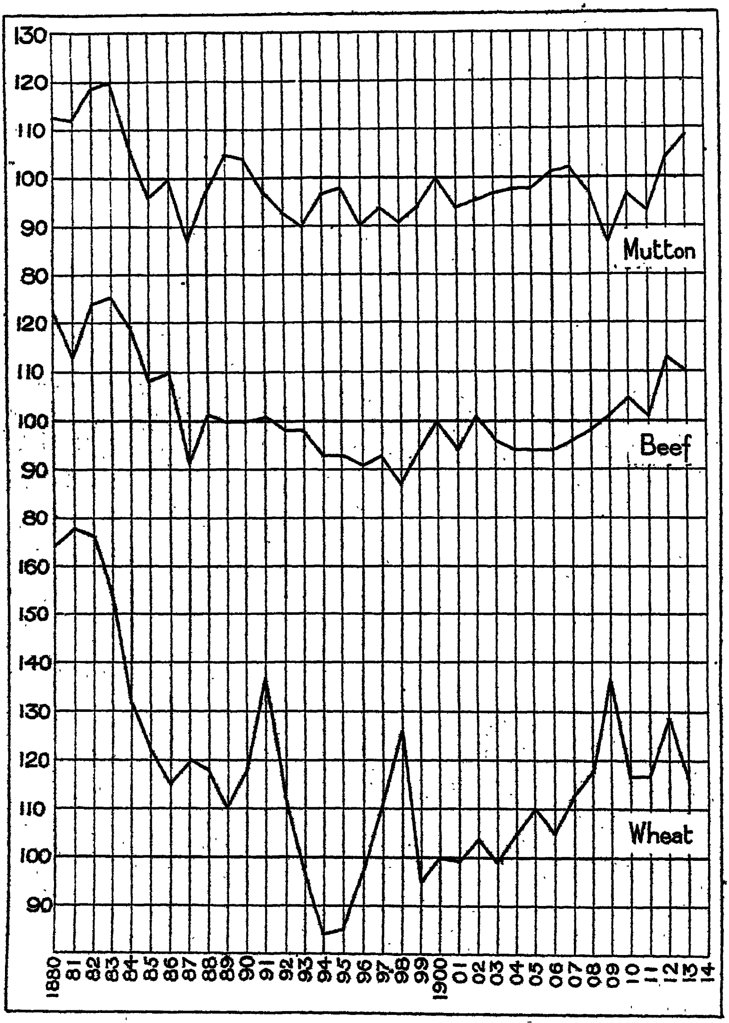

FIG. 5.—Changes in Prices of Wheat, Beef and Mutton, 1880—1913.

Turning to more general conditions, very little correspondence is shown between rates of wages in England and Wales and average prices of British corn. Fig. 3 shows the movements in prices of wheat, barley and oats, and in cash wages of

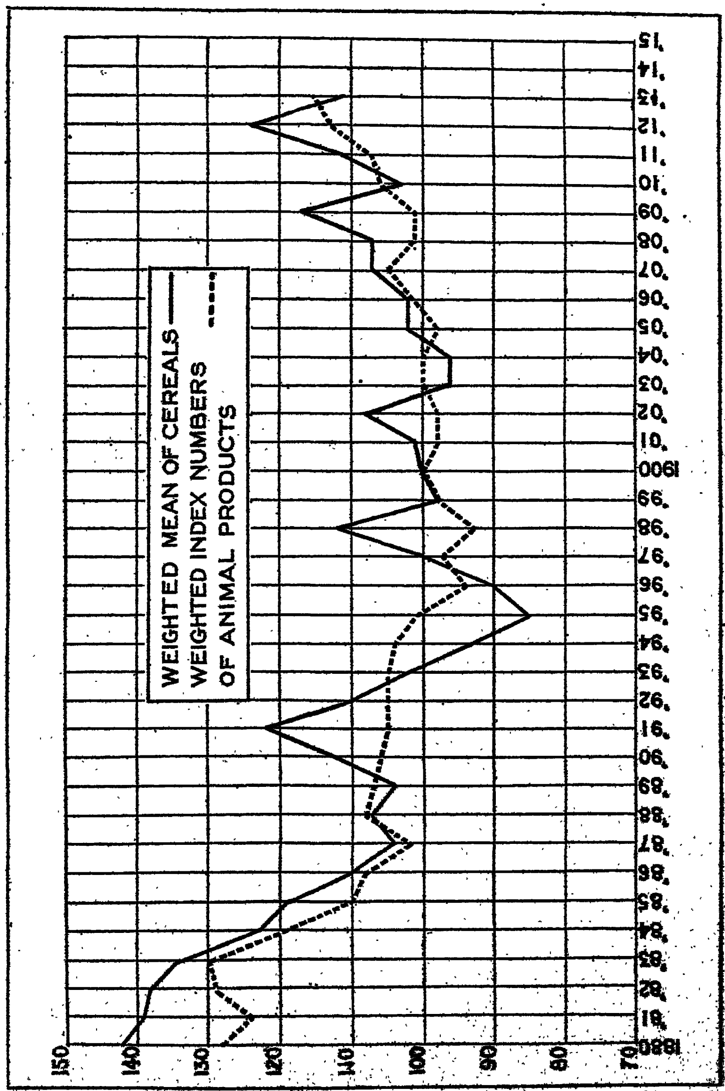

FIG. 3.—Movements in Weighted Index Numbers of Prices of Cereals and of Animal Products of British Farms.

ordinary agricultural labourers from 1880 to 1913. But a much clearer indication of the general movements in prices of corn is given by Fig. 4, which illustrates the movements in a weighted index number for the prices of wheat, barley and oats.

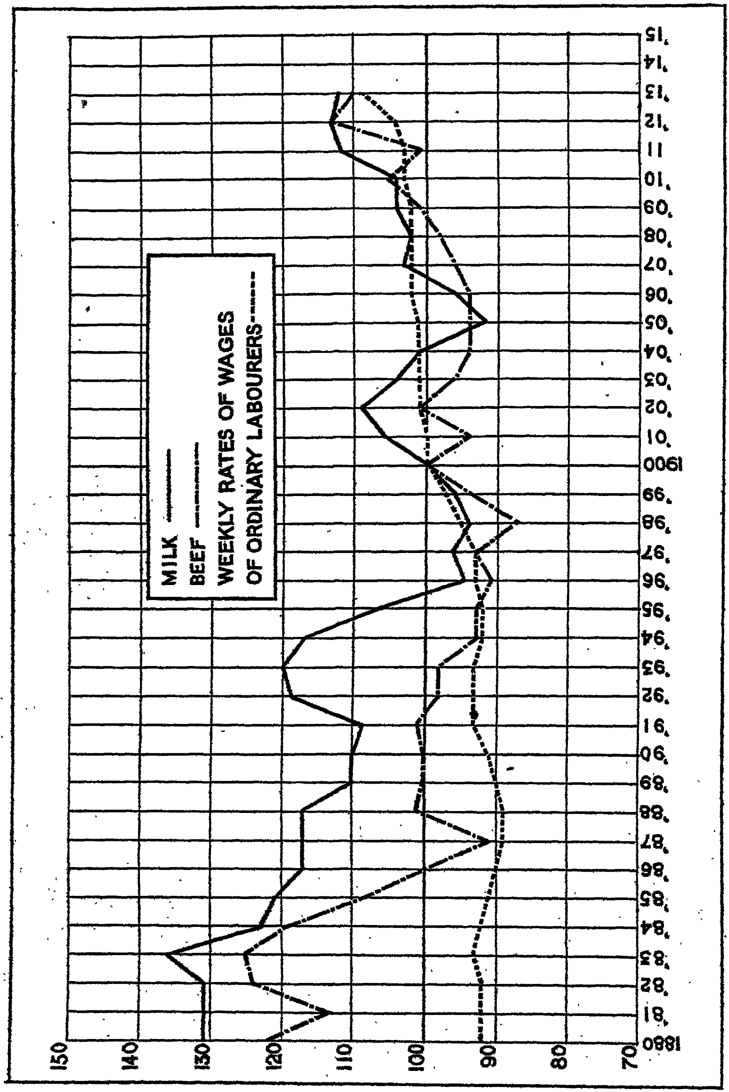

FIG. 7.—Movements in Prices of Beef and Milk and in Cash Wages of Ordinary Labourers, 1880—1913.

Although these figures indicate that cereal prices exercise some slight influence on wages of farm labour, or that movements in corn prices and wages are to some extent due to the same causes, it is evident that wages do not rise and fall with prices in the way that some people expect them to do.

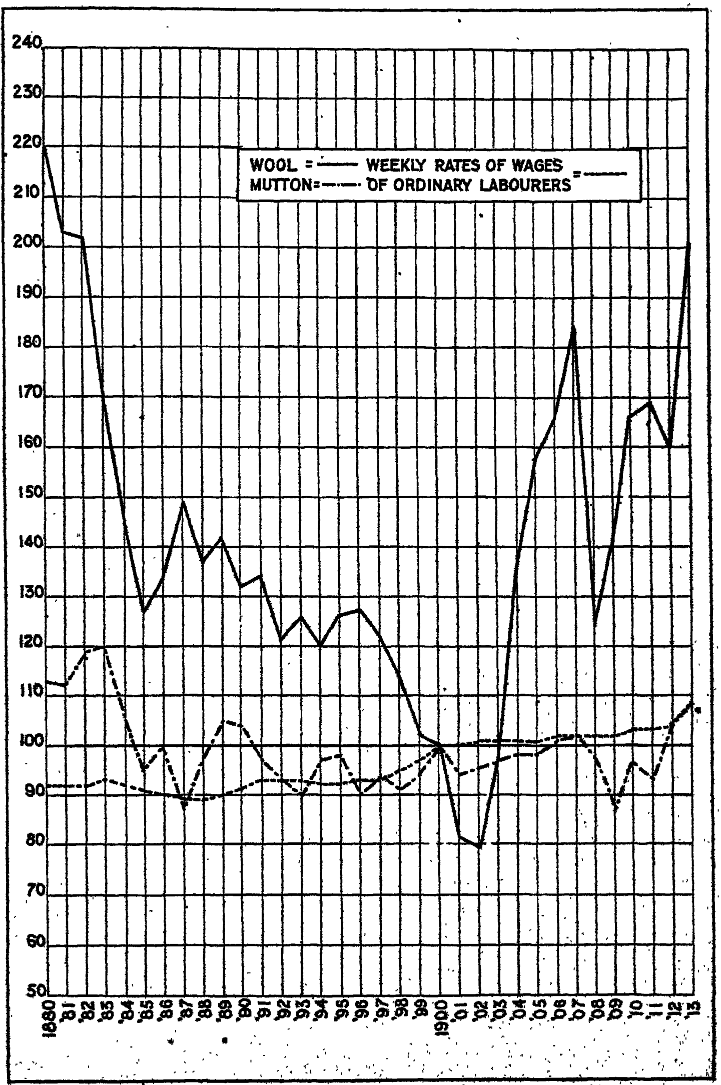

FIG. 8.—Movements in Prices of British Mutton and Wool, and in Cash Wages of Ordinary Labourers, 1880—1913.

In discussions dealing with the prices of farm products the assumption is frequently made that prices of live stock products rise or fall with those of corn. This could only be the case if movements in the prices of the various articles were due to the same causes, and the movements would be equal if the common causes acted on the price of each article with equal force. During the last thirty years the changes in the prices of wheat, beef and mutton have not all been the same, and even when common changes are shown individual prices are affected in varying degrees. The reasons for such common changes as have occurred will be treated at a later stage, but Fig. 5 illustrates the actual changes in prices of wheat, beef and mutton since 1880.

By weighting the index numbers of prices of the chief animal products of the farm (beef, milk, mutton and wool) in the same way as those of cereal prices have previously been done, a common figure for the prices of these articles has been obtained, and the results are shown in Fig. 6. Here again some common movements are shown, but on the whole the similarities are much less important than the differences.

Turning now to prices of animal products only, Fig 7 shows the movements in wholesale prices of beef and milk, with those in the rates of cash wages of ordinary agricultural labourers. Here again, little correspondence is shown in the movements, but they are somewhat more closely related than in the case of prices of cereals and wages.

When the changes in the prices of mutton and wool are compared with those in rates of wages the results are quite different. During the last period, 1880—1913, the prices of wool have fluctuated more than those of any of the farm products dealt with, while the prices of mutton show less fluctuation, on the whole, than those of any other of these products. These movements are shown in Fig. 8.

But when the prices of the four animal products are taken together there is comparatively little correspondence between the movements and those in rates of cash wages. Fig. 9 shows the changes in both a weighted and unweighted index number for the combined prices of beef, milk, wool and mutton. The changes in the line showing the unweighted index number are largely due to the changes in the price of wool, and the total receipts by sale of wool account for a small proportion only of the total receipts by sale of the farm products. It will be noticed that since 1890 the variations in the line showing the changes in the weighted index number are comparatively small. There can be little doubt that this line represents the general level of prices with a fair degree of accuracy, and the comparative steadiness of the prices of the four products, taken together, was undoubtedly one of the chief causes of the popularity of live stock farming from 1890 to 1913. It is, therefore, not at all surprising that closer correspondence is shown between changes in the weighted index number of the

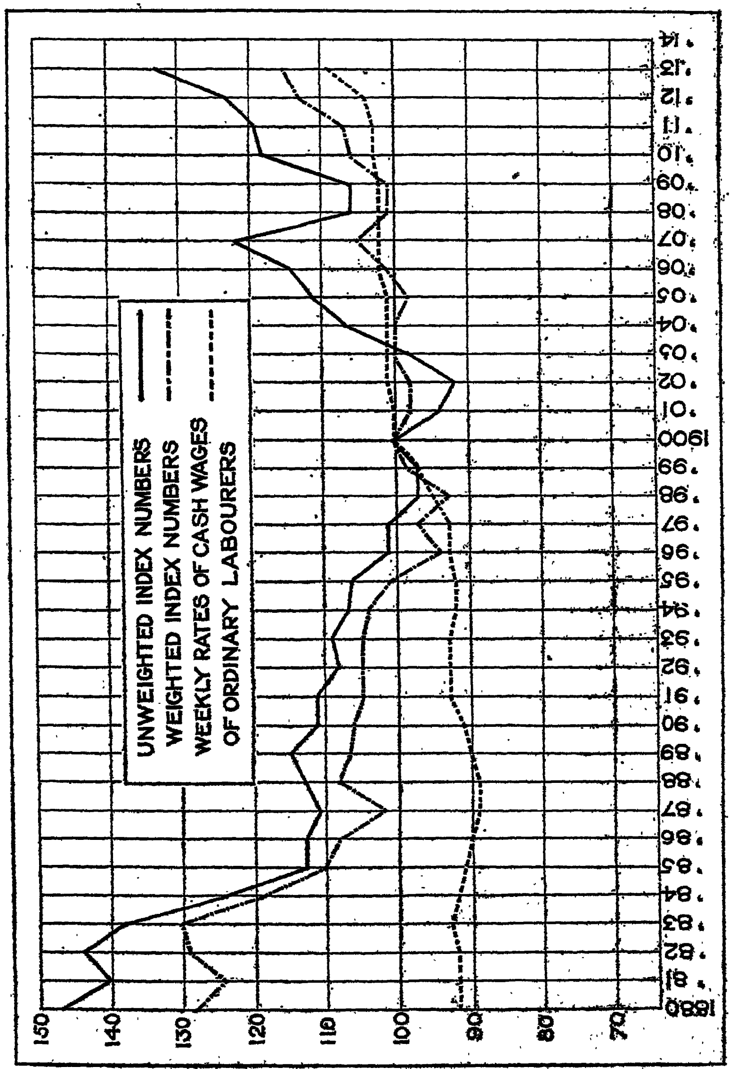

FIG. 9.—Changes in Weighted and Unweighted Index Numbers of Prices of Animal Products and in Cash Wages of Ordinary Labourers, 1880—1913.

combined prices of beef, milk, mutton and wool and the index number for wages, than in the case of the weighted index for the prices of the three cereals and wages.

It is now necessary to bring together the prices of the seven

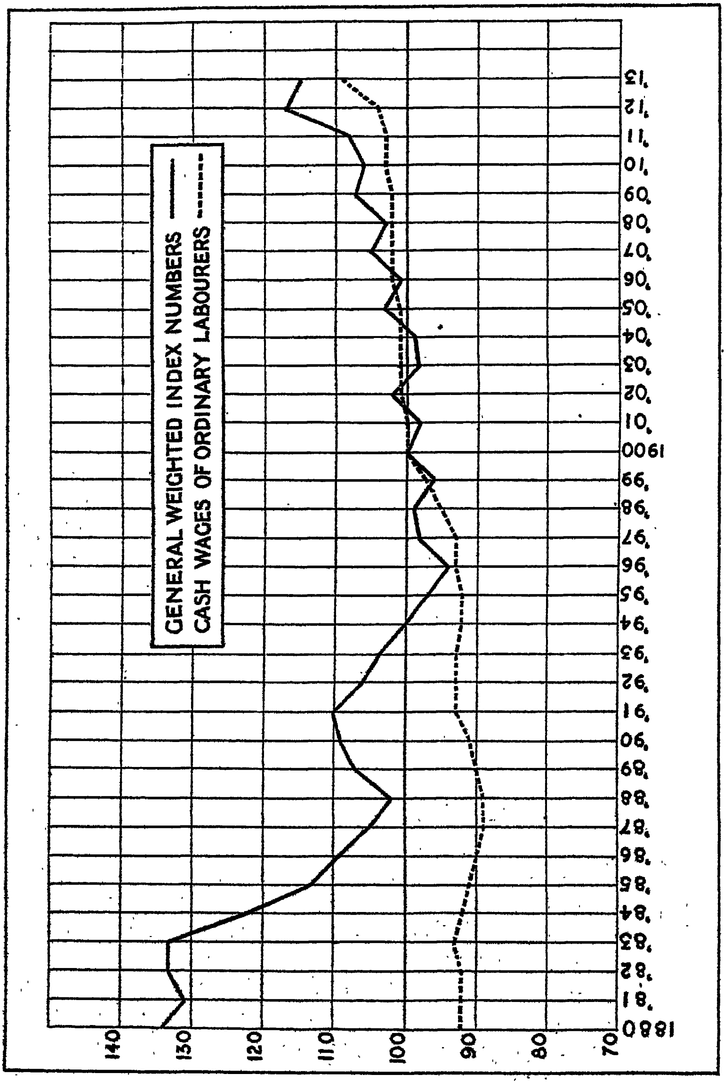

FIG. 10.—Changes in the General Level of Prices of Seven Chief Products of British Farms, and in Rates of Cash Wages, 1880—1913. (Weighted Index Number of Prices.)

farm products which have been dealt with, and Figs. 10 and 11 show respectively lines representing changes in weighted and unweighted index numbers of these combined prices, with changes in the index numbers of rates of wages. The most

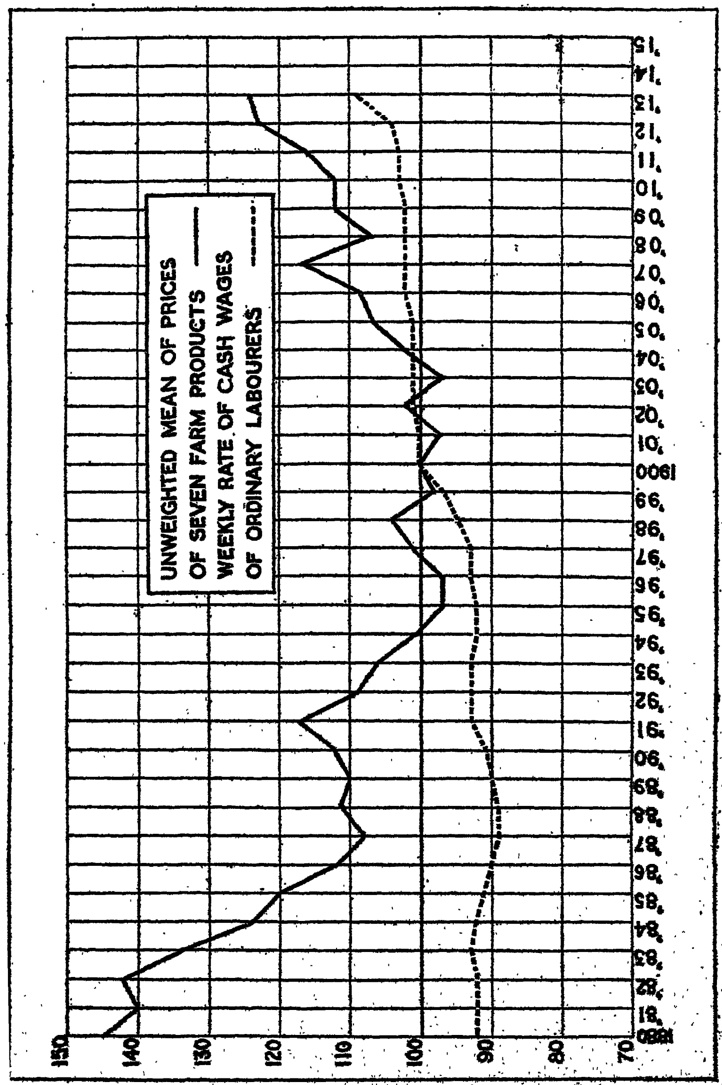

FIG. 11.—Changes in the General Level of Prices of Seven Chief Products of British Farms, and in Rates of Cash Wages, 1880—1913. (Unweighted Index Number of Prices.)

remarkable characteristic of these charts is the illustration they provide of the generally accepted principle that changes in rates of wages follow slowly rises and falls in prices, although the close correspondence of the two lines in Fig. 10 from 1906 to 1908 is somewhat remarkable. The considerations have so far been limited to the effect of changes in prices upon wages, but mention must be made of the influence of changes in wages upon prices through their effects on costs of production. The various charts given illustrate not only the small influence of prices upon wages, but equally the small influence of wages on prices. This might almost be deduced from the relative importance of the factor of labour in general production. In the figures collected by the Committee of the Agricultural Wages Board it was shown that of the total expenditure per acre in 1913-14 only 20 per cent. was spent in labour on "tenant" farms, and 22 per cent. on "home" farms. The figures collected for the National Farmers' Union by Mr. James Wyllie, for presentation to the Royal Commission on Agriculture, show for 1913-14 that the proportion of costs of labour (cash wages) to total expenditure varied on different groups of farms from 13·8 to 28 per cent., the average being about 21 per cent., or almost exactly the same as that found by the Committee of the Agricultural Wages Board. The figures collected by the Agricultural Costings Committee show that the proportion of expenditure on labour to the total varies from 20 to 29 per cent., with an average of 24 per cent., but these figures include board and allowances and are for a period some five years later than that to which the previous figures relate. The figures for the later period, collected by the Committee of the Agricultural Wages Board and by Mr. Wyllie, show an average proportion only very slightly above that for the pre-war period, and lower than that shown by the figures of the Agricultural Costings Committee. But whether the average proportion of the total expenditure which is due to labour is taken at 20 or 25 per cent., it is clear that changes in rates of wages do not affect costs of production to the extent that is sometimes suggested. If labour costs represent 25 per cent. of total costs, and other costs remain stationary, then an increase of 100 per cent. in rates of wages would cause a general increase in costs of 25 per cent.; or if labour costs equal 20 per cent. of the total, then 100 per cent. increase in rates of wages would cause a general increase in costs of 20 per cent. This would be the position if no change in the quantity of labour occurred, but should the quantity be reduced, as frequently happens when wages rise, then the general increase would be smaller. When labour costs represent 20 per cent. of the total an increase or decrease of 10 per cent. in rates of wages will cause a similar change of 2 per cent. in general costs. But it is clear that such small changes in rates of wages as occurred in the thirty years prior to 1910 would have comparatively little effect on general costs of production.

An exhaustive analysis of the causes of changes in prices of the individual products dealt with would require more time and space than is available at present. It may, however, be brought to mind that all the products except milk have been subject to competition of imported supplies. But in the case of beef, and especially of mutton, competition was not keen until after 1890, and considerable fluctuations in prices occurred before this date. Where weather conditions cause changes in the amount of supplies, and fluctuations in prices follow these changes, the weather conditions of other countries are more important than those in England with relation to the supplies of corn. The influences which may affect prices through their effect on supplies or on cost of production are indicated by the following items :—

Weather conditions.
Level of prices previously ruling.
Health of herds and flocks.
Changes in the use of machinery for production.
Changes in transport facilities.

Either of these factors may exercise a positive or a negative influence on supplies and prices. Good weather conditions, whether in relation to crops or stock, increase supplies and tend to lower prices, while bad conditions have opposite effects. A fairly high price for one or more articles in relation to the general level of prices stimulates the production of such articles for a year or two, but this of itself may be the cause of some over-supply, and thus bring down prices. A low price at the starting point has the opposite effects. Changes in the use of machinery for production, and development of transport facilities, have had a positive effect on supplies during the period under review, and have reduced prices. But some changes, as increased cost of transport, tend to raise prices. As a result of the application of mechanical improvement to production or transport it may be noted that increases in rates of wages do not necessarily raise costs of production. Indeed, it may be said that some increases in wages are the results of falling costs of production due to improvements in equipment or methods. On the other hand, when the general level of prices (or the value of money) remains steady, and no improvements in methods of production are occurring, general increases in the rates of remuneration of the people engaged in the production of one class of articles will raise costs of production, and tend to raise prices.

On the side of demand it may be brought to mind that changes in the number of consumers, or in their prosperity, is the chief factor. The number of consumers may be increased by actual growth in population, or by an improvement in the prosperity of a nation, or of groups within a nation, which enables them to consume an article they have not previously consumed, or to consume more of an article than they did previously. Here again the price level itself may affect demand and consumption, but the effects of changes in prices of farm products on the demand for them are by no means simple. A fall in the price of breadstuffs may be the cause of a decrease in demand for them, and of an increase in demand for other foodstuffs, especially meat, while a rise in prices of breadstuffs may actually increase demand for them, and diminish the demand for meat or other foodstuffs. On the other hand, a large increase in meat prices may cut off demand, or a decrease have the opposite effect.

But the cause of fluctuations in prices of farm products which is common to the fluctuations in general prices is that of changes in the value of money. Two of the most marked general changes in the weighted index number of prices of farm products, the sharp fall from 1880 to 1889 and the rise from 1908 onwards, were due to this cause. On the whole, the prices of all seven commodities show similar fluctuations due to this cause, but not all in the same degree, and some of the fluctuations in individual prices are affected by special causes while the influence of the general cause was showing its effects. The general movements in wholesale prices due to a common cause from 1888 to 1890 is shown by the following table. The figures for wholesale prices of seven farm products are given with those of 47 articles in the Board of Trade's weighted index numbers for wholesale prices, and those for one industrial group, viz., textile raw materials.

	Weighted Index Number of seven Farm Products (as calculated for the purposes of this article).	Weighted Index Number of Wholesale Prices of 47 Articles (including Farm Products) Board of Trade.	Index Number of Prices of Textile Raw Materials.
1880	134	129·0	130·0
1881	131	126·6	127·6
1882	133	127·7	123·4
1883	133	125·9	119·1
1884	121	114·1	115·2
1885	113	107·0	108·9
1886	109	101·0	99·9
1887	105	98·8	102·7
1888	102	101·8	101·2
1889	107	103·4	105·1
1890	109	103·3	105·4
1900	100	100·0	100·0

The chief causes of this downward movement of prices were the rapid expansion of the world's output of commodities, together with some falling off of the supply of gold from the mines,[1] but the most important cause was the expansion in the world's trade.

From 1905 onwards general wholesale prices show an upward tendency, and this is shown, on the whole, by prices of the seven farm products dealt with. But the prices of both British beef and British mutton were suffering from the competition of the imported products of Australia and the Argentine. Indeed the prices of meat were then suffering in the same way as wheat prices suffered from the competition of American and Indian wheat some thirty years earlier. The most general cause of the rise in the level of prices during this period was the increase in the supply of gold.[2] The comparative movements in prices 1905 to 1913 may be shown by the same items as in the previous Table.

	Weighted Index Number of Prices of seven Farm Products.	Weighted Index Number of Wholesale Prices of 47 Articles.	Weighted Index Number of Prices of Textile Raw Materials.
1900	100	100·0	100·0
1905	103	97·6	106·7
1906	101	100·8	121·1
1907	105	106·0	127·4
1908	103	103·0	109·8
1909	107	104·1	112·4
1910	106	108·8	136·2
1911	108	109·4	128·9
1912	117	114·9	119·6
1913	115	116·5	135·0

The only official figures for retail prices obtainable relate to retail prices in London. But as actual prices are not under consideration it is possible to use these figures for the purpose of indicating changes in the general level of retail prices. There is some tendency towards higher retail prices in London than in the country, but there is no known cause for any important differences in changes in the general levels of retail prices in the country and in London. Fig. 12 shows the changes in the level of retail prices of 23 articles of food in London, together with the changes in the general level of wholesale prices of seven farm products from 1892 to 1913. As might perhaps be expected the prices of farm products show greater changes than do those of retail prices of food. This is partly due to the differences in the number of articles dealt with in the two groups, but it is also due partly to the fact that comparatively small changes in wholesale prices occur without any effect on retail prices.

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[1] See W. T. Layton's *Introduction to the Study of Prices.* Ch. 7.

[2] Layton. Ch. 8.

The general causes of changes in the rates of wages now remain to be considered. These may be divided according as

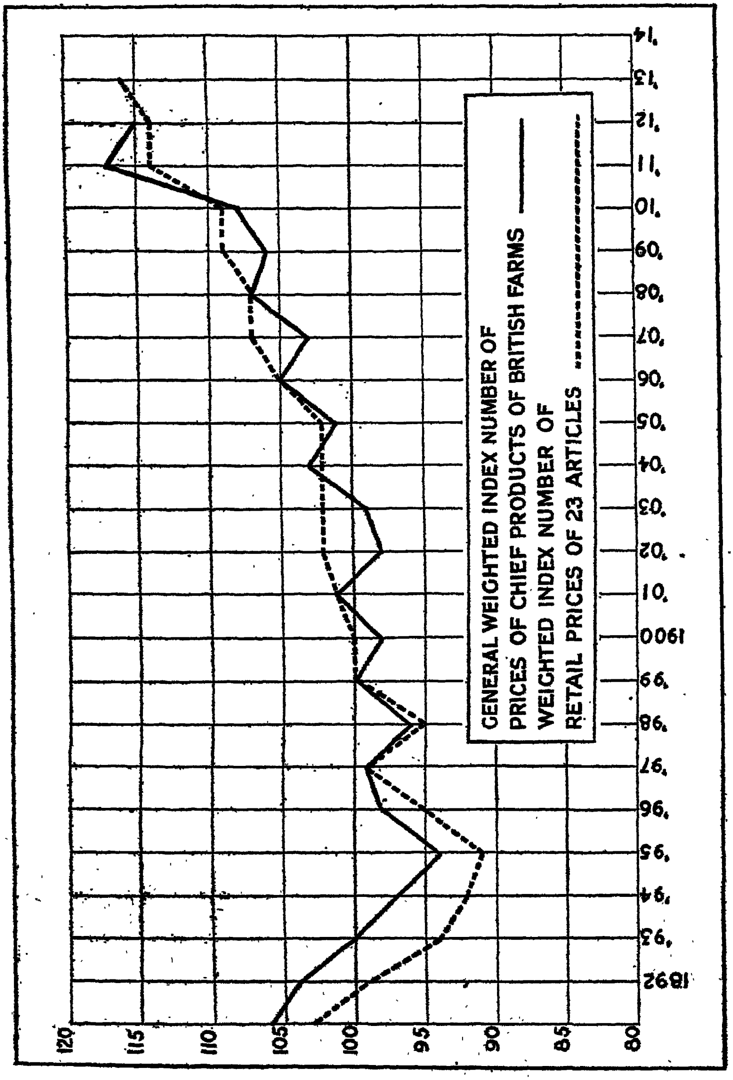

FIG. 12.—Changes in Wholesale Prices of Seven Farm Products, and in Retail Prices of 23 Articles.

they arise on the side of the supply of or the demand for labour. The supply of labour is determined by the number of workpeople available, and also by their physical and mental efficiency. But the actual supply of labour for any individual industry is subject to the influence of the demand for labour in other industries and the rate of wages such industries offer. Now there can be no doubt that the possible supply of labour for agriculture was almost as great in 1910 as in 1880, but the actual number of workers employed was much smaller. Indeed, the total net loss of males engaged in agriculture between 1880 and 1910, was 156,000 or nearly 14 per cent. of the number engaged in the earlier year.[1] Thus the total supply of labour was smaller, but the labour displaced had been absorbed by other industries, which had, on the whole, suffered reductions in prices of products similar to those suffered by agriculture. They had, however, been enabled to provide real wages higher than those paid in agriculture, or, at least, higher than those the men would have earned had they remained in agricultural employment. The methods by which this was done lie outside the scope of this inquiry ; but the importance of this reduction of the potential supply of labour for agriculture was an important factor in the maintenance of rates of wages of farm workers. There is no adequate reason for believing that farm workers of the twentieth century have less physical or mental capacity than those of the nineteenth century, so it may be said that the actual supply of labour was diminished in about the same proportion as the reduction in the number of workers. On the side of demand, the reduction in prices which leads to a reduction of output will lead to a smaller demand for labour, or at any rate for smaller labour costs. But a fall in prices is not necessarily followed by a reduction of output, especially when economies can be made or new methods used for production. Or should a reduction in output occur it is not necessarily in proportion to the fall in prices. The farmers of this country did reduce the output of certain articles after 1870, but the reduction in the total value of output was by no means as large as the fall in prices, or as the diminution in the number of farm workers. By making economies and using new methods in production, especially by using machinery, by increasing production of certain articles and diminishing that of others the English farmers were able to maintain the rates of wages of their workers from 1880 to 1900, with the exception of a brief period from 1884 to 1889, and slightly to raise wages when prices began to rise after 1900. But even when prices were falling rapidly wages showed only a slight decline, and if prices had not fallen it is by no means certain that the quantity of labour would have remained the same as in previous decades, for the migration of workers had begun before prices began to fall. Prior to 1880 farmers were finding that they

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[1] See Cd. 25, 1919, page 33.

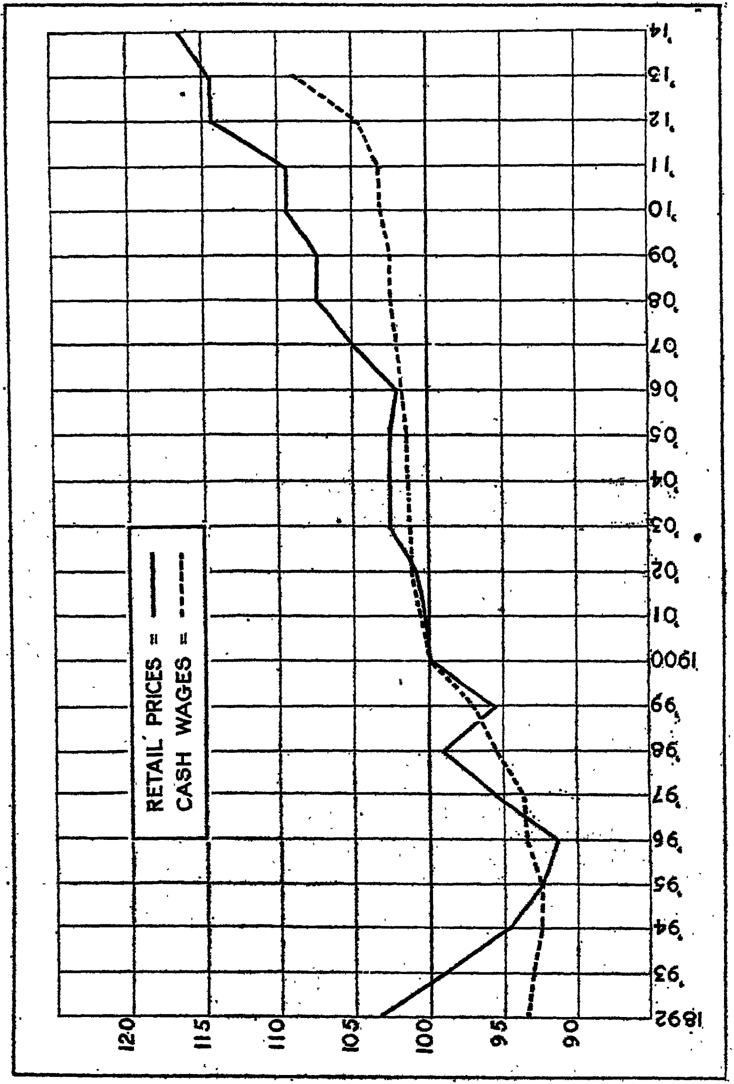

FIG. 13.—Changes in Rates of Cash Wages of Ordinary Labourers and in Retail Prices of 23 Articles, 1890—1913.

could make economies in production, and could use new methods, and it is probable they would have developed these slowly even had they not been forced to do so by falling prices.

The comparative position of the farm worker as a wage-earner during the period under review is shown by the various figures, but his position as a purchaser has also to be considered. Again, it is unfortunate that no records of retail prices ruling in country districts are available, but as movements only have to be indicated the changes in retail prices in London may be used. Fig. 13 shows the changes in the rates of wages of ordinary agricultural labourers with those in the retail prices of 23 articles from 1893 to 1913. The results show that wages do not rise and fall in proportion to changes in retail prices, but that the worker obtains some increase in real wages as a result of falling retail prices, and suffers some disadvantage when retail prices rise.

The use of the statistical method of correlation has been purposely avoided in the compilation of this article, so that the information may be used by the greatest number of people, but it would probably be necessary to use this method to obtain any logical foundation for a sliding scale of wages based on prices. It may, however, be said that the data obtained leads to the conclusion that any attempt at providing a basis for a sliding scale would have to cover the prices of the seven articles which have been dealt with, and possibly those of some other farm products. Further, it is quite clear that the prices of cereals alone do not determine the economic position of either the farmer or the worker, and that cereal prices do not provide an index to the general level of prices of farm products. Also, the conclusion that the level of prices of farm products does not alone determine the economic position of the farm worker must be admitted. His wages do not necessarily rise or fall with prices, and his position as a purchaser has been affected inversely rather than directly by changes in prices. During the nineteenth century, especially during the last quarter, the influence of the prices of breadstuffs on his prosperity has declined as his standard of living has risen. Under the normal conditions existing just prior to the War a rise in the prices of British cereals would have had little effect on his position as a purchaser, unless it had been accompanied by a similar rise in all or the majority of the articles which he purchased.

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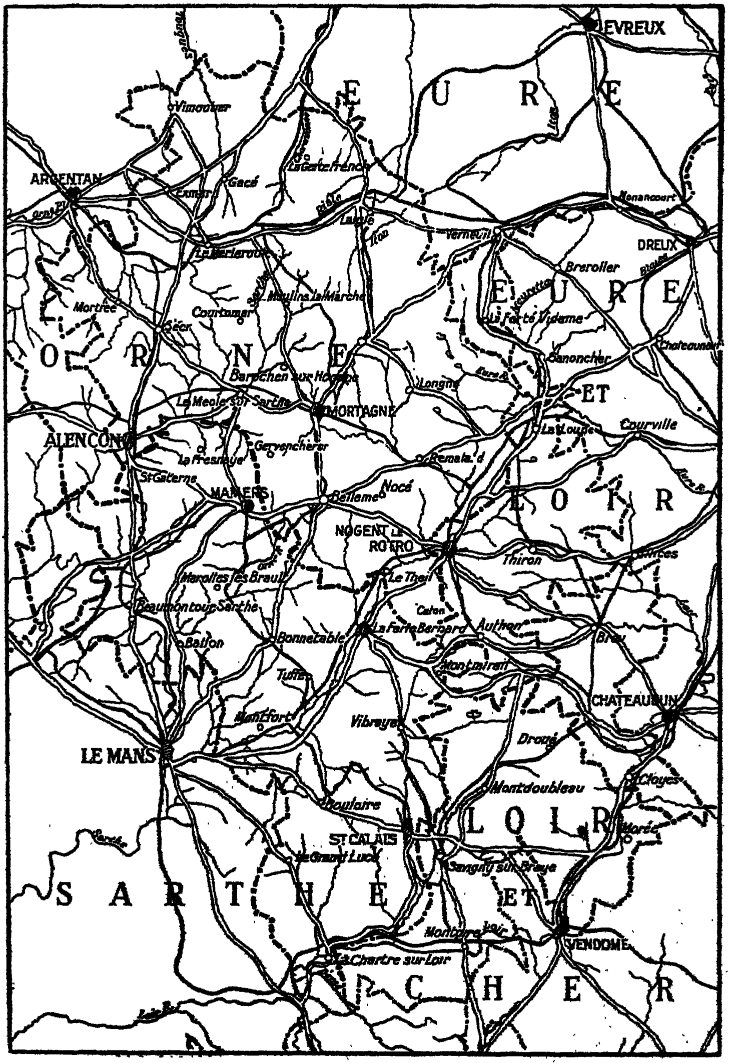
THE PERCHERON HORSE.

THE Royal Agricultural Society of England has been good enough to ask me to contribute some account to its Journal of the Percheron horse, a breed which very favourably impressed many officers and breeders serving in the British Army during the five years of war when Englishmen and Frenchmen, vying in courage and endurance, grew to like and admire each other. I shall try to give a faithful description of the district in which the Percheron originated, and to trace the history of the breed by indicating its formation and characteristics, its evolution and expansion in France and abroad, and its merits and defects as compared with other heavy draught types.

It is a curious thing that we possess few precise documents about our Percheron breed, which is one of the oldest in France, and probably the purest in existence. Whilst numerous French authors have been interested in it, such as du Häys, Gayot, Daubihan-Delisle, Gallier, Trollet, &c., the subject has been most carefully studied in an American work, "History of the Percheron Horse," published at Chicago by the *Breeder's Gazette.* This has provided me with useful information. I owe a further debt of gratitude for their valuable help to the eminent director of the Pin Stud, the Vicomte de Tonnac, M. de Chevigny, director of the Besançon stud, who did so much observation in America, M. Pierre Corbière, the illustrator of this article, M. Aveline, M. Perriot, and many other Percheron horse breeders who taught me to love this fine old type during the seven years in which I had the honour to manage the Pin Stud, and the twenty-seven years during which I continued to visit them either as member or president of committees for purchasing stallions for the national studs of France.

Cradle of the Percheron Race.—Le Perche, the cradle of the Percheron race, is one of the smallest provinces of old France. The name of Perche is said to come from that of the forest "Perticus Saltus," which formerly covered almost the whole district. In the ninth century a considerable amount of the land was cleared of trees, under the direction of monks who had established numerous powerful abbeys; but splendid groups of forest trees still remain and are valuable regulators of climate and water supply. The principal forests are those of St. Evroux, Le Perche, Longny, Mortagne, and Bellême of the immemorial oaks.

The province of Perche was divided into the department of the Orne, which took about one-half, and in lesser proportions



Map of the Percheron Breeding District.
Prepared by M. Trollet.

the departments of La Sarthe, Eure and Loir, and Loir and Cher. Its extremities were Vimoutiers on the north-west, Alençon on the south-west, La Chartre-sur-Loir and Vendôme on the south, La Loupe on the south-east, and La Ferté Fresnet on the north-east. The district borders on the old provinces of Normandy on the north and west, and Maine on the south-east; in the south it touches Vendôme and le Dunois, and in the east La Beauce, that magnificent corn land known as the granary of France.

Geology. From the geological point of view, in the neighbourhood of Mortagne, Mamers, Bellême, is found Jurassic Marne which forms the greater part of the Merleraut district; superior cretaceous is found on wide expanses, composed alternatively of clay, sand and lime, thus forming the moist and fertile argilo-calcareous lands. As one goes further north the lime tends more and more to replace the sand, and that, M. Tonnac says in his course on hippic science, is the reason why the more active horses are found in Upper Perche, while the further south one goes, on to the alluvial soils, the heavier and larger are the Percherons raised.

Climate.—The climate is somewhat damp and entirely favourable to herbaceous vegetation; it is colder round Mortagne and Argentan; the average temperature recorded is 50 deg. Fahrenheit, and the summer heat does not go beyond 77 or 86 deg. Fahrenheit. The westerly and south-westerly winds, which generally bring rain, and those from the north and north-west are the most frequent; the annual average number of wet days is about a hundred, and the average marked for one year by the rain gauge is 35 inches.

Production Zone.—Brood mares are naturally found especially in districts of medium cultivation where grass-land is in suitable proportion. This zone comprises all the territory north and north-west of Mortagne, in Upper Perche; the best centre is Pervenchères, where a stallion depôt was established some time ago by the National Studs. It includes also the country round Mondoubleau in Lower Perche, where there is another depôt of national stallions; and then returning towards the Huisnes, the environs of Nogent le Rotrou, notably the excellent soil of Céton, which is considered the best district for strong mares, Theligny-sur-Sarthe, Masles, Nocé le Theil, La Ferté Bernard.

Breeding Zone.—"The foal comes into the world very early, and lives in the open air from his birth," says M. de Tonnac: "If it is a female of a good type, she remains in the district to continue the family; if a male, he goes away as soon as he is weaned, that is to say about October, to breeding districts such as Regmalard, Le Theil, Nogent, then to the north and east of the *arrondissement* of Mortagne, and finally, later on, to La Beauce and the Chartres country, where he earns his keep by working. His working life begins at 18 months, and at 30 months his fate leads him to the stud either in France or abroad, if his build allows, otherwise commerce takes him either for large-scale cultivation of corn-lands or for industrial transport work in big towns."

Rural Economy. The Percheron Farm.—In the following interesting letter M. Edmond Perriot, the clever and well-known breeder in La Ronce, near Le Theil-sur-Huisne, gives an account of the rural economy under which the Percheron race lives and develops.

"Generally," he writes, "Le Perche farms are 110 acres in size, divided into 22 acres of wheat, wheat and rye mixed, or rye, 22 acres of fallow and roots, beet, carrots, and potatoes, 22 acres of oats or barley, 22 acres of rotation grasses, and lastly 22 acres of permanent pasture. This cultivation is usually done by four mares reared on the farm, and put to the stallion (either national, approved, or authorised) every year. If any of them is found not to be in foal she is subsequently handed over for commercial uses in Paris or Bordeaux, and is immediately replaced in the stables by a filly of two or three years born and reared on the farm. These mares, by their work on cultivation, earn their keep, and their offspring, whether male or female, bring in a yearly net profit to the breeder. Male foals are in demand: (1) by stallion breeders who begin by making sure of a certain number of selected foals, chosen both for their pedigree and their build; (2) by breeders who keep them for a year, and at the end of that time the stallion-breeders make another selection from them before purchases are made by La Beauce Commerce, which takes all the available yearlings of the district. Among these yearlings exported into La Beauce, where they work and are well fed on corn, there are sometimes found choice specimens which, when brought back to Le Perche and set aside for service, produce superior horses—as a result, I believe, of the more energetic temperament and stronger build caused by dry, plentiful, rich food, healthy work, and the invigorating air of that magnificent plain.

"The Mortagne district differs slightly from the general breeding zone I have just described. It has, in fact, a larger proportion of grass land, so that the mares do less work. It may happen that on a farm containing four mares, only two go in harness. In the Nogent region it is different again, there is little grass, only about 11 acres to a farm, and the mares work more; they foal in the stable and a week after foaling they return to the team. Many Stallion breeders prefer foals from these mares and value them at 200 or 300 francs more than those from idle brood mares.

"Stallion breeders are obliged to have large areas of grass land for the well-being of the colt who is very particular in the choice of his grass. So that a field of 22 acres must not contain more than three two-year-olds. This shows the extent of land needed to rear 100 colts. Several large stallion-establishments in Le Perche include at least 1,125 acres of grass."

Historical.—The history of the Percheron race is that of all domestic breeds. It evolved with the exigencies of civilisation. It may be grouped into four stages :—

A. The middle ages, characterised by the powerful charger barbed with iron and carrying a heavy rider covered in armour.

B. The period following the invention of fire-arms ; apart from increasing agricultural needs, artillery demanded energetic draught horses and cavalry needed swifter ones.

C. The era between 1800 and 1860, when the organisation of highways multiplied stage coaches and post chaises.

D. The railway era of 1860, which unharnessed the stage coach for ever and turned the Percheron exclusively into a heavy draught horse.

We know nothing definite about the Percheron charger, who is often reproduced in old illustrations with a grey or white coat. Legends like to give him, as they do to horses of many other French provinces, an oriental ancestry. No doubt, after the disaster that befel the Saracens between Tours and Poitiers in 732 at the hands of Charles Martel, a number of Eastern horses remained in the country and were used for breeding. Failing fuller information, this may be quoted as a possible explanation of the characteristics of energy and distinction combined with strength, which are suggested by the charger. It has been recorded that the seigneurs of Le Perche used to bring Arab stallions back from their crusades for the use of their studs, but hitherto no authentic document has been found in support of this assertion.

Under Louis XIV, mention is made of Italian, Barbary and Spanish stallions, and at that time Le Perche provided horses for the court and the army, as well as draught horses. Numerous chronicles of the time prove that the horse industry was active. The Royal Studs, and later those of the First Empire favoured the use of stallions capable of reproducing cavalry horses, that is to say thoroughbreds. The only ones obtainable then were Arabs and Barbs. However, the latter found no more favour with breeders of draught horses than they do to-day, and their rôle was therefore limited. The result of researches in the national archives made by Messrs. Alwin-Howard-Sanders and Waine Dinsmore for the *Breeder's Gazette* lead one to suppose

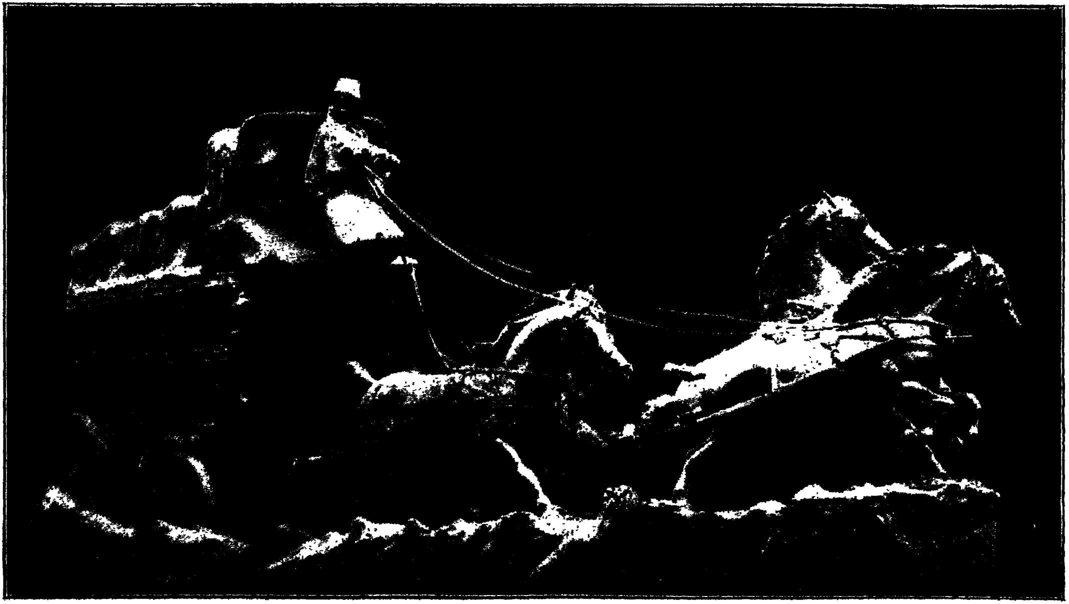


FIG. 1.—A DILIGENCE IN 1830.

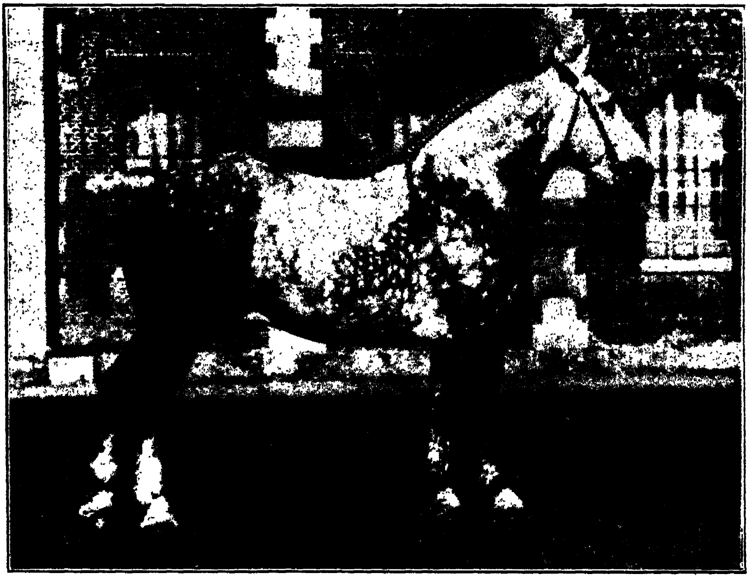


FIG. 2.—PERCHERON STALLION, "NICHET."

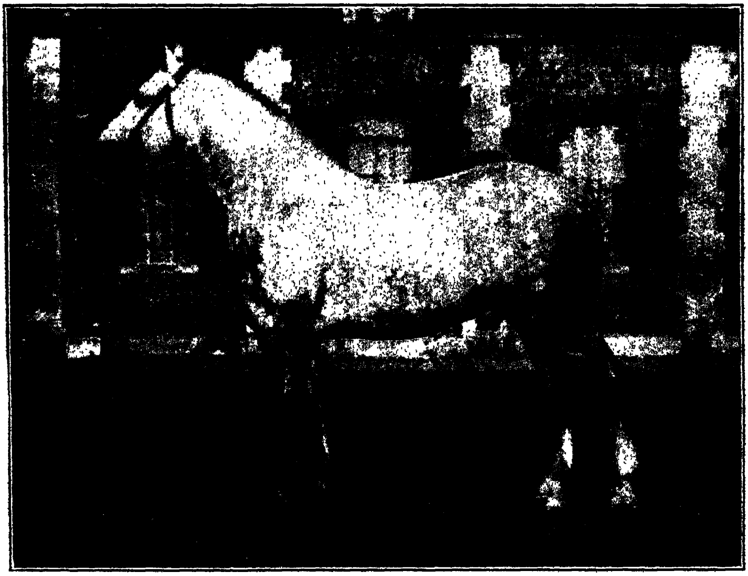


FIG. 3.—PERCHERON STALLION, "POLONAIS."

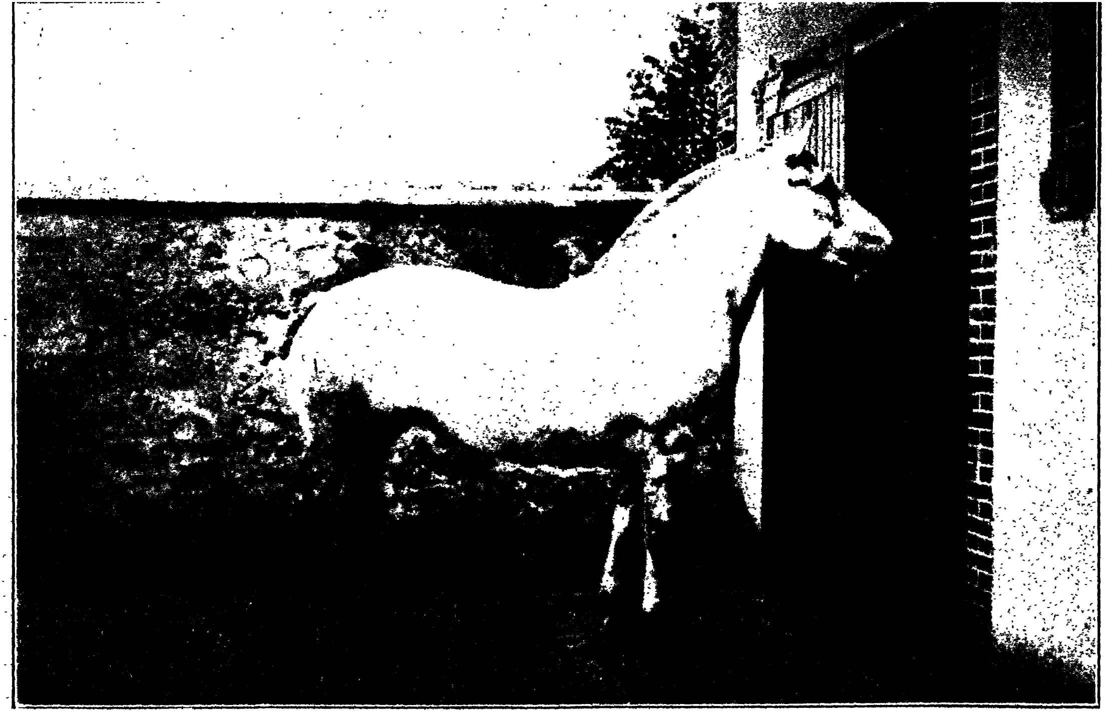


FIG. 4.—PERCHERON FILLY, "KABYLE."

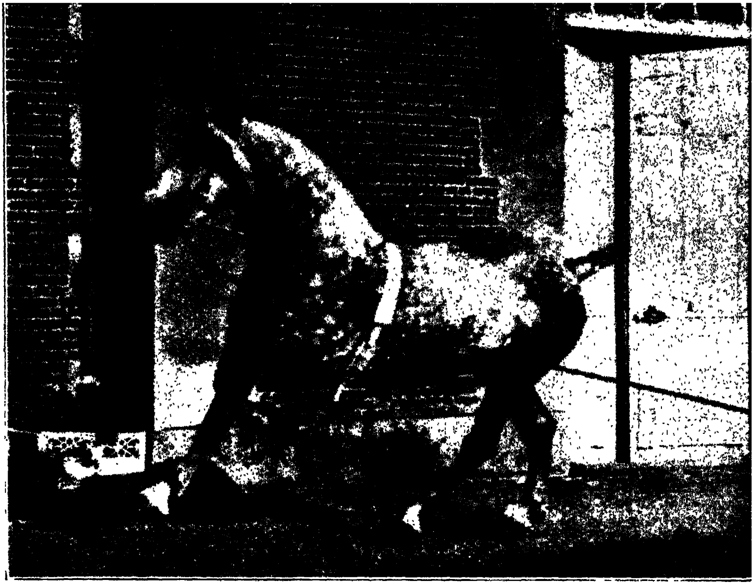


FIG. 5.—PERCHERON STALLION, "KAISERLICK," TROTTING.

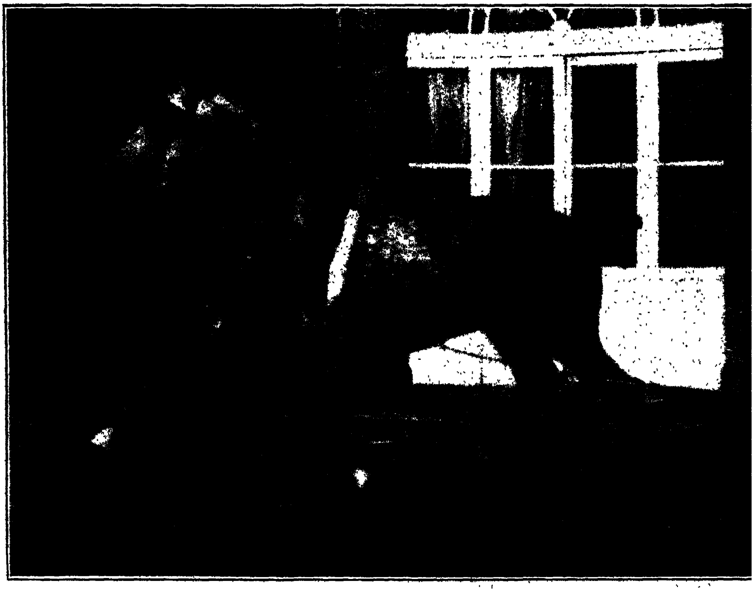


FIG. 6.—ANOTHER VIEW OF SAME.

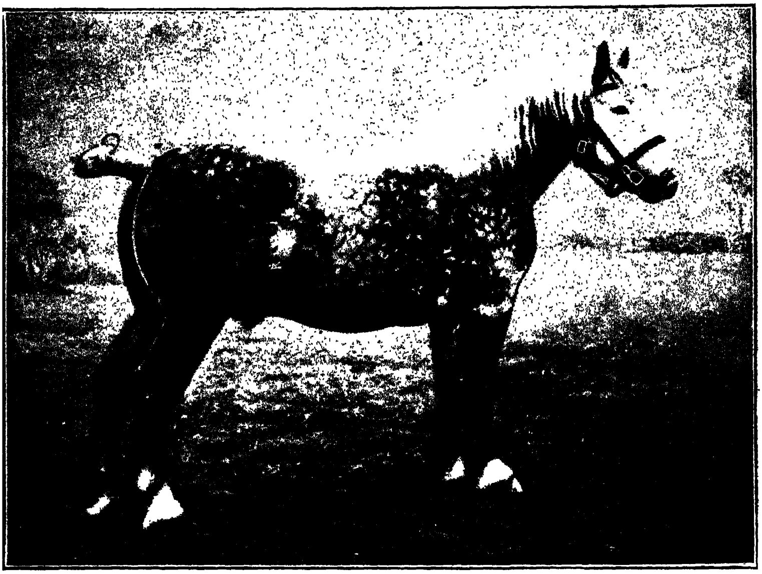


FIG. 7.—PERCHERON STALLION, "MISANTHROPE."
Winner of First Prize in Class for Percheron Stallions, of any age, Cardiff, 1919.
Exhibited by MR. HENRY OVERMAN.

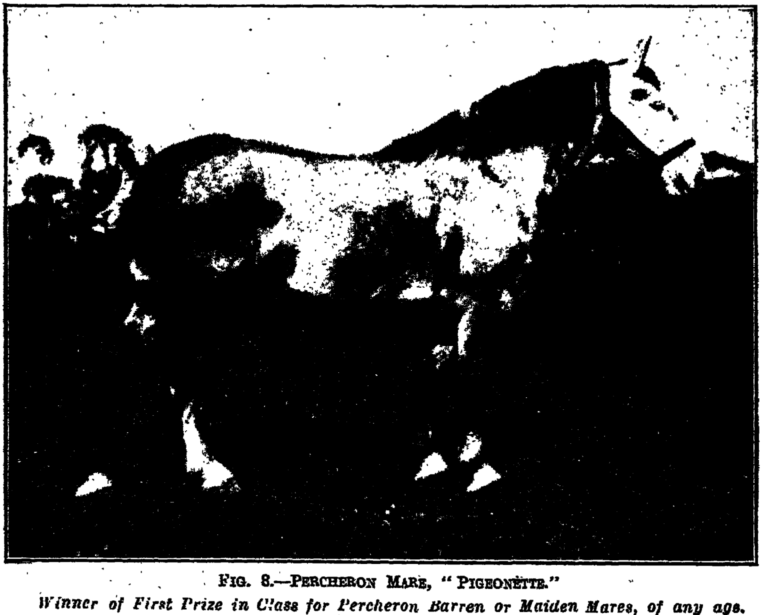


FIG. 8.—PERCHERON MARE, "PIGEONETTE."
Winner of First Prize in Class for Percheron Barren or Maiden Mares, of any age, Cardiff, 1919.
Exhibited by LORD STALBRIDGE.

that the same applied to the chestnut saddle stallion *Godolphin* of Mecklenburg-Strelitz, and the grey Turk *Gallipoli*, brought to the Bellême district by the Marquis of Briges, manager of the Pin Stud. That charming story-teller, du Häys, makes *Gallipoli*, who disappeared in 1820, the progenitor of a stallion of legendary fame in Le Perche—*Jean le Blanc*. Born in 1823 or 1824 in the Orne, this sire has been credited with numerous pedigrees and was remarkably productive; he was exceptionally long-lived and died at the age of 32. Du Häys considered the Percheron's grey coat to be a feature transmitted by crossing with the Arab.

Indeed, the grey coat existed very early in Le Perche. It was in demand at the time of stage coaches, because light-coloured horses were preferred for night relays, being more visible in the dark. A distinction must be made between the dappled grey, which is the typical Percheron colour, and the grey of Arab horses. Here is a short statement on this point by M. Quinchez, General Stud Inspector, the best judge of Arab horses in France, who has had many opportunities of studying them most thoroughly on his frequent visits to Syria, Baghdad and Cairo, for the best desert coursers that can be procured are to be seen at the important "sport" gatherings in Egypt:—

"It is quite accurate to say that the dappled grey (*i.e.* of the Percheron) is not the grey of Oriental horses. These are generally pale grey with a few light-brown spots; dark spots are very rare. The best, usually, are greys very much marked with light spots, and these are very seldom seen. Although grey is considered the usual coat of Arab horses and is very common among Baghdad and Syrian breeds, it is far from usual in the desert; the chestnut generally predominates among thoroughbreds. *I have never seen a dappled grey Arab.*"

An old book published at Mortagne in 1801 throws some light on what the Percheron used to be and what the breed was like after the revolutionary upheaval.

"The breed of horses known as Percheron is destroyed, entirely wiped out," says citizen Fontenay; "the suppression of studs has contributed to its extinction. The race was valuable for its courage, vigour, and longevity. It was even more precious for its qualities of endurance than for its splendid make.

"It had excellent haunches, fine hocks, well-sprung ribs, perfectly free though rather heavy shoulders, a somewhat over-muscular neck, a slightly heavy head, perfect limbs, and feet that could pass any test.

"Perhaps the Percheron race, the qualities of which are no doubt due to the climate and the nature of the grass lands, might be restored by distributing the best stallions over the whole district . . . . &c."

An instance of the care with which the Percheron race was kept pure is found in the account of the assizes held at Mortagne in 1843 by the Normandy Association, and in the statistical and administrative annual of 1820 for the Department of Eure-et-Loir. This recommends the institution of indigenous stallions selected from breeders' stables and approved by the Government. M. Fardouet, president of the Percheron Horse Society, attributed to that organisation the happy and lucrative evolution carried out under the ægis of stud administration, but independently, or very nearly so, of the few Percheron stallions it then possessed, and which were often considered to be too much reduced by the breeder, his constant care being to develop and increase the race.

There is indeed a difference between the Percheron of to-day and what he was at the stage-coach period, strikingly and faithfully evoked by the photograph (Fig. 1) reproducing a bronze by J. Joire in the Lille museum. The Percheron then in demand was a light draught horse capable of drawing a fair weight, over rough ground, at a sustained speed of 7½ to 10 miles an hour, according to the relays. The horse was of an average height of about 15 h. 2 in. was lighter than he is to-day, and more active. Among the mares who have kept this type most closely in the Orne and round Ecouché, where M. Cheradame's distinguished Percheron stallions were placed, there were still a few thirty years ago who could trot the kilometre in two minutes. I knew two in the immediate environs of Le Pin.

Excluded from rapid transport, and condemned to farm work and heavy traction, the race evolved in the direction of weight and size. The dray-horse (the largest and heaviest stable horse put between shafts) became the object of all breeders. The American demand for a "ton horse" accelerated the movement, which was complicated by a marked preference among the foreign purchasers for the black coat. At that time (about 1885) M. Fardouet, senior, former President of the Percheron Horse Society, had in his possession a stallion named *Malakoff*, who at 5 years weighed 21 cwt. 68 lb., and one of his sons, shown at a competition at Nogent by a breeder named Collas, of Nocé, weighed 20 cwt. 15 lb. at the age of two. "I need not tell you," writes the Chief Judge, who gave me this information, "that this race of elephants never did any good, and proved the ruin of stables that had put their trust in them." In order to reach such a weight these animals were fed on cow's milk, and they stood over 17 hands.

It has been regretted that at this period in the history of the breed crosses were tried with Poitou stallions to increase the weight and height, and especially with Nivernais horses for the sake of the black coat. These mistakes were short-lived; they were confined to certain stables, and there is ample ground for asserting, with all the sane consideration that comes from lapse of time, that the complaints made in certain publications of the time (1880—1890) were exaggerated. It would be vain to-day to look for traces of the deadly effects foretold by certain personages of that period. It is true that better-informed American demand no longer sacrifices everything to size, and has ceased to fear the grey coat.

"As for the grey coat," wrote M. de Chevigny on returning from a mission in America, "the Americans who ten or fifteen years ago would have no grey, and on this account placed the Percheron race in some danger, have altered their views. The Chicago prize-winners are now frequently grey—*Jalap*, *Kaptif*, *Kanton* and *Lagos* are grey, and a great American breeder said to me one day with truth: 'Your breed is grey, and if you change the coat you spoil the breed.'"

Points of the Percheron.—The Percheron is tall, strongly built, wide and deep; he has a noble crest and large but well-proportioned head with a straight forehead; very muscular forehand and quarters; his joints and tendons are strong, firm, and well defined; he stands firmly and squarely on excellent feet. There is no doubt that the Percheron horse is the finest specimen of our French draught breeds. He is remarkably active, and must never have his hocks set too wide or too straight; they should rather be slightly flexed and even rather close, especially for rough going.

One of the illustrations (Fig. 2) shows one of the finest types of Percheron stallion in France. This is *Nichet*, P.S.B. No. 117897 by *Jack and Junte* by *Guguste*, one of the Le Pin Stud, and service stallion at Pervenchères. His weight and measurements are as follows:—

Weight.	Height.	Chest.	Knee.	Canon.
17 cwt.	16 h. 3 in.	7 ft. 7½ in.	17½ in.	11 in.

Another is that of a four-year-old, *Polonais* (Fig. 3) No. 125998, son of Lord Lonsdale's *Lagos* and of *Hystique* by *Grévy*. This fine colt, remarkably developed and perfectly clean legged, is striking even among the selected Percherons of the Pin Studs; his weight is 16 cwt. 78 lb., height 16 h. 3 in., chest 7 ft. 1 in., knee 17 in., canon 11 in. It is worth noting that these two stallions work daily and are in service condition. With the photographs of *Nichet* and *Polonais* I include that of the mare who won the first prize at the Central Show in Paris in 1914, *Kabyle*, born in 1910 at M. Perriot's stables, a grey, 16 h. 1½ in. She is a most beautiful Percheron mare, and her head is especially typical (Fig. 4).

In default of the film, which alone could give an exact idea of the action, are given two snapshots (Figs. 5 and 6) of *Kaiserlik*, P.S.B. No. 90316, trotting. In spite of the photographer's skill, they give only an imperfect idea of the energetic, brilliant, balanced action of this Percheron who roused much enthusiasm at the exhibitions at which he took part in the Court of Honour in the Pin Studs on the occasion of big horse shows held there. In no other breed would one find such speed combined with so much weight, frame and strength. The expressive, courageous bearing of this Percheron should also be noticed.

Progressive Evolution and Expansion of the Percheron Race.—Before the war the production of the Percheron race had attained very great prosperity, not only on account of a very lucrative export trade with U.S.A. and Argentine, but also because the breed was very numerous in France wherever conditions of soil and climate permitted. If that increase has been set back during the five terrible years we have gone through, it would be a great mistake to suppose, as several personages beyond the Atlantic seem to do, that Le Perche is ruined, and the race as it were extinct and unable to meet the demand for exports for a very long time. Such assertions merely cause a smile, and may best be met with a few figures. In 1909 the total number of Percheron stallions in the French national studs was 307 head; for 1919 it is 409. That is the best proof of the power of expansion of a race which swarms in the Loire basin, in Lower Normandy, North Brittany, Poitou and Vendée. The movement is particularly interesting in the Pin area which comprises not only the department of the Orne, but also part of La Sarthe, and then Eure, Seine et Oise, Seine Inférieure and part of Calvados. The total strength of this important depôt was—

In 1890	52 stallions Percherons.
„ 1900	68 „ „
„ 1910	102 „ „
„ 1919	131 „ „

Out of these 131 stallions only eight (seven grey and one black) were standing in Le Perche in 1919, the chief part in production having always belonged in that country to the institution of approved stallions. It is here, says the "History of the Percheron Horse," that the national archives show us "the splendid service rendered by the Government of France in the day when the horse-loving people of that province were seeking to lay the foundation of the industry that was destined to add millions to the wealth of French and American farmers."

Factors in the Improvement of the Percheron Race.—It is from 1820 onwards that the stud service began to give first place to Percheron stallions in the *arrondissements* of Nogent le Rotrou, Mortagne, and Vendôme. A little later La Sarthe derived benefit from the same measure. From that time onward until 1833 forty-three stallions are recorded as having been approved and used especially round Nogent, La Ferté, Mortagne, and Mondoubleau. Except in very rare cases, these Percheron sires are grey (thirty-eight or thirty-nine out of forty-three); the lowest height is 15 h. 2 in.; those of 16 h. and more are the most numerous, and there are some of 17. The returns of mares put to some of them give some idea of the characteristic coat and height of brood mares of that time. In Eure and Loire round Nogent the predominant coat with mares was the dappled grey, and then black. The height is greater than in Vendôme and Mortagne. Here also the greys are in the great majority, and with the blacks are found some bays, and a few chestnuts. With the years, and under the influence of agricultural societies and breeders' committees, the race is gradually eliminating all traces of foreign strain; its height and weight are increasing. The following tables show at a glance the part played by private stallion-breeding in Le Perche during the last twenty years; they show all the vitality of the equine industry of the province, and also its progress and the homogeneity of the race as regards coat and size.

Percheron Stallions, approved and authorised, in service in 1900—1914 *and* 1919 *in the part of Le Perche depending on the Pin Stallion Depot, parts of the Departments of l'Orne and La Sarthe.*

Year 1900.

	Coat	No.	Height		
			Lowest	Average	Highest
Approved 40, 3 years and over . .	Black	18	15 h. 3 in.	16 h.	16 h. 1½ in.
	Grey	22	15 h. 3 in.	16 h.	16 h. 2 in.
Authorised . .	Black	1	—	—	16 h. 3 in.
	Grey	7	15 h. 3 in.	16 h.	16 h. 1½ in.

REMARKS.—According to the Law of August 14, 1885, no stallion is allowed for service in France unless recognised by Sanitary Commissions to be free from roaring and periodic ophthalmia[1]. Approved Percheron Stallions receive from the Government premiums varying from 300 francs to 600 francs. Authorised stallions receive no premium from the Government but their offspring, like those of Approved and National stallions, are qualified to take part in competitions subventioned by State funds.

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[1] According to Sir John McFadyean, this disease is unknown in England.—Ed.

Year 1914.

	Coat	No.	Height		
			Lowest	Average	Highest
Approved, 84 . .	Black	32	15 h. 3 in.	16 h.	17 h.
	Grey	52	15 h. 1 in.	16 h. 1 in.	17 h.
Authorised, 4 . .	Black	3	15 h. 3 in.	—	16 h.
	Grey	1	—	—	16 h. 3½ in.

Remarks.—Out of the fifty-two grey stallions approved in 1914, only two are 15 h. 1 in.; the heights are more frequently 16 h. and especially 16 h. 2 in. Out of the thirty-two approved blacks, two only are 15 h. 3 in. high; eleven are 15 h. 3½ in.—16 h.; twelve are 16 h.—16 h. 1½ in.; four are 16 h. 2 in.—16 h. 3 in.; two are 16 h. 3½ in., and one is 17 h.

Year 1919.

	Coat	No.	Height		
			Lowest	Average	Highest
Approved, 67 . .	Black	28	15 h. 3 in.	16 h.	17 h.
	Grey	39	15 h. 2 in.	16 h.	16 h. 3½ in.
Authorised, 4 . .	Black	1	—	—	16 h. 1 in.
	Grey	3	15 h. 3 in.	15 h. 3½ in.	16 h.

Remarks.—Out of the twenty-eight black stallions approved in 1919, thirteen are below 16 h.; fourteen are above 16 h.; one is 16 h. Out of the thirty-nine grey approved stallions eighteen are below 16 h.; fourteen are above 16 h.; seven are 16 h.

Percheron Stallions approved or authorised, having served in 1900—1914 and 1919 in the part of Le Perche depending on the Blois Depot, parts in the departments of Eure and Loir, and of Loir and Cher.

Year 1900.

	Coat	No.	15 h. 1 in. to 15 h. 3 in.	15 h. 3 in. to 16 h. 1 in.	16 h. 1 in. to 16 h. 3 in.
Approved (3 years and over) 23	Black	9	—	3	6
	Grey	14	—	6	8
Authorised, 5 . .	Black	3	—	2	1
	Grey	1	—	1	—
	Bay	1	—	1	—

Year 1914.

	Coat	No.	15 h. 1 in. to 15 h. 3 in.	15 h. 3 in. to 16 h. 1 in.	16 h. 1 in. to 16 h. 3 in.
Approved, 44 . .	Black	14	—	7	7
	Grey	30	—	23	7
Authorised, 1 . .	Black	—	—	—	—
	Grey	1	—	1	—

Year 1919.

	Coat	No.	15 h. 1 in. to 15 h. 3 in.	15 h. 3 in. to 16 h. 1 in.	16 h. 1 in. to 16 h. 3 in.
Approved, 39	Black	14	—	8	6
	Grey	25	—	18	7
Authorised	Black	—	—	—	—
	Grey	—	—	—	—

The heights are taken for the month of November preceding the year in which the stallion served. At that date certain horses were only 32 months old, therefore certain heights are capable of increasing. The diminution recorded in 1919 is far from disturbing, for it must be understood that these figures were compiled in November, 1918, that is to say, before demobilisation. There is no doubt that those for 1920 will be higher than 1914.

At the last purchase meetings for the National Studs at Mortagne and Nogent nearly 180 horses were shown and many breeders foreseeing the early resumption of exportation were only showing part of their stock.

The extremely high prices given to-day for prize horses provoke intensive production, and whatever may be the loss caused by Army requisitions or purchases, in a short time the horse crisis resulting from the war will be only a memory.

Independently of the important part played by stallions, whether national, approved, or authorised, the service of the State Studs comes in again for the selection and preservation of the best females, thanks to prizes awarded in the shows now held at the headquarters of the various horse districts of Le Perche, Mortagne, &c. The judges officiating at these shows are presided over by the inspector of these states or the director of the area.

The following table gives a summary of the show held for the single district of Mortagne in 1919 :—

	Animals shown.	Prizes awarded.	Sum distributed.
			fcs.
Foals of 2½ years	30	11	2,450
„ „ 3½ „	28	10	2,450
Fillies of 3 „	20	12	2,600
Brood Mares of 4—15 years	37	20	4,800
	115	53	12,300

To this should be added the splendid shows organised by the Percheron Horse Society, which are held, following an old-established rotation, alternatively at Alençon, Mortagne, Nogent, La Ferté Bernard, Mamers. Their programmes include classes of colts and fillies of two and three years, brood mares and stallions of four years and over.

"These meetings," says the Viscount de Tonnac, "constitute the finest exhibition of Le Perche, more than 300 stud animals taking part in them. Many sets of judges presided over by officers of State studs work at the same time, but a parade of all the winners enables foreign buyers to look over each class."

It is thirty-four or thirty-five years since these shows were instituted by the Society at the instigation and on the advice of big American buyers, Mr. Dunham especially. They had an enormous success which has never lapsed (433 animals shown in 1914 against 387 in 1910) and they are the occasion of numerous very remunerative transactions. Thanks to them the Percheron has become widely known and was better prepared than any other breed, owing to its stud book and its prize record, whether for exportation, or to figure in the Central Show of breeding animals organised at Paris every year at the end of June by the Government.

Almost at the same time as it was founded, the Percheron Horse Society instituted its stud book (1883), with the object of securing the purity of this fine breed and of giving that official control and sanction necessary for exportation.

The Percheron Horse Society to-day numbers 2,600 members, and has its centre at Nogent le Rotrou, Eure and Loir. According to its statutes, the entry of horses and mares in the stud book was limited to the following districts :—Dept. Eure and Loir : Nogent le Rotrou, Authon du Perche, Cloyes, Brou, Thiron, Gardais, La Loupe. Dept. Loir and Cher : Droué, Mondoubleau, Morée, Savigny sur Bray, Montoir sur Loir. Dept. of the Orne : Mortagne, Bellême, Nocé, le Theil, Regmalard, Longny, Tourouvre, Laigle, Moulins la Marche, Courtomer, Le Mesle sur Sarthe, Pervenchères, Le Merleraut, Mortrée, Sées, Alençon, Bazoches sur Hoesnes, Exmes, Vimoutiers, la Ferté, Fresnel, Gacé.

Sarthe : La Fresnaye, Mamers, Marolles-le-Braults, Bonnétable, Tuffé, la Ferté Bernard, Montmirail, Vibraye, St. Calais, Bouloir, Montfort, La Chartre sur Loir, Le Grand Lucé, Ballon, St. Paterne, Beaumont sur Sarthe.

The following extract from the preface to the stud book shows the spirit in which this book was instituted :

"To preserve and perpetuate the valuable qualities of the Percheron race against invasion from all sources is one of the missions of this society. In order to accomplish this purpose it becomes necessary thoroughly to investigate all elements of breeding that have contributed to the grand result we now enjoy, and to classify carefully all animals with their pedigrees, that we may see what strains of blood, which families and what orders of union have been prolific of the greatest benefit in the past, thus establishing invaluable precedents from which more intelligently to shape our future course, and with greater degrees of certainty arrive at the desired ends. These investigations have shown us that the improvements of the past necessary to meet the changing demands have been accomplished by selecting animals best suited to the new requirements, and by a judicious system of in-and-in-breeding perpetuate the valuable qualities sought for, at the same time intensifying their hereditary power of transmitting those qualities."

In an additional Article of the Institutions of the Society, dated August, 1886, it was decided that under certain special conditions, any animal whose father and mother were entered on the Percheron Stud Book of France, would in his turn be entitled to entry in the Stud Book provided he was born in France. Since 1889 foals and fillies inscribed in the Stud Book are branded with the sign of the Society on the left side of the neck in the year of their birth, between three and six months at the most, and in any case before leaving their first stable. The veterinary surgeons recognised by the Society are entrusted with this duty.

The number of entries in the Stud Book since its foundation is 140,000, and for the eight years preceding 1919 as follows :—

6,422 in 1911
6,685 in 1912
7.286 in 1913
5,451 in 1914
4,622 in 1915
3.985 in 1916
3,569 in 1917
3,881 in 1918

In glancing through the volumes of this stud book one finds the names of great ancestors who were, so to speak, the corner stones of the present edifice. It is very regrettable that no photograph of these distant sires has been preserved. It would certainly be instructive to know more about the legendary *Jean le Blanc*, born in 1823 or 1824 at M. Miard's stable, and sire of a number of stallions : *Toulouse* the magnificent, born in 1839 and approved from 1845 to 1859, who served at M. Chéradame d'Ecouché's stud ; *Chocolat* of the same owner ; M. Ducoeurjoly's *Collin*, M. Fardouet's *Romulus* and *Madère*, M. Caget's *Selim*, and *Romulus* and *Décidé d'Amilly*, from whom were descended many of the best mares inherited by M. Perriot from his father-in-law, M. Rigot, of Longue Haie. The latter possessed in his time the finest and most valuable mares in Le Perche.

To the Perriots belong the heads of the line of *Coco II.*, the two *Brillants*, &c.

Students of pedigrees and prize records will doubtless be interested to consult the returns classifying the principal stallions according to the number of times they appear as ancestors of prize winners at the Percheron Hippic Society's shows during the decade 1901–1910.

This list figures on page 591 of the "History of the Percheron Horse." I will only quote the first ten :—

Brillant III. (2919)	quoted	123	times.
Bésigne (19602) .	„	92	„
Villers (8081) . .	„	87	„
Fendon (38) . .	„	71	„
Voltaire (443). .	„	61	„
Jules (37987) . .	„	50	„
Marathon (10386) .	„	38	„
Briard (1630) . .	„	30	„
Jupiter IV. (13001).	„	19	„
Lavater (14574) .	„	18	„

The figures in regard to the names of these heads of lines prove that the in-breeding system, indispensable for the preservation of typical features, is normally practised—an important fact.

Shire, Clydesdale, and Percheron.—To attempt a comparison between our Percheron horse and the fine Shire and Clydesdale draught races is treading on rather difficult ground. This modest study would, however, be too incomplete for the R.A.S.E. if I did not deal with this question.

The Shire, a most striking animal with his great height (above 17 hands), his wide frame, the beauty of his lines, his depth, his weight—which may reach a ton—seems indeed the most imposing draught animal now in existence. Being very strong, he has the reputation of being able to move the maximum weight movable by any draught horse ; but his size and bulk do not allow him to travel fast ; he is essentially a plough horse for strong, heavy soils, or else a worker in the transport of industrial or maritime towns which no stranger can cross without admiring these great courageous, docile, steady giants.

The Clydesdales are smaller (16 h. 3 in. to 17 h.), less heavy and deep, and not so wide in their lines. Their action is more energetic, and they are valuable for rapid traction of heavy loads. Some of them are remarkable for their action in the trot, which is fairly high, and at the same time well spread and balanced.

Many English publications do not seek to disguise the fact that the Clydesdale's weak point is his lack of breadth and depth of body. Although these faults have been much reduced, thanks to the selection secured by shows and the foundation of a stud book, they are still frequently found. Lastly, the temperament of the Clydesdale is a little delicate in the matter of food, and he is particular as regards quantity, though less so, according to certain information, than the Shire who needs enormous rations.

Our Percheron, who is less developed and lighter than the great English draught horses, will certainly not prove as attractive in a show ring to the amateur as the colossal horse; yet he has many good qualities. Everything in expression, attitudes and action of this strong and diligent traction horse suggests strength, energy, activity, robustness and endurance. A mere glance shows how much finer is his muscular system in proportion to his weight. Nothing equals his clean limbs, strong articulations and excellent feet. His rusticity and staying powers are proverbial, and the war has given the incredulous the opportunity of proving that nothing in this last statement is exaggerated. There is no doubt that the Percheron, if a little less strong, is much steadier, swifter, and more staying than the Shire; more robust and easier to keep than the Clydesdale, and more enduring.

This is no doubt the opinion of the excellent breeders and sportsmen who founded the Percheron Horse Society of England, and who since 1915 have come to Mortagne and the surrounding districts on several occasions to buy stallions and mares, many of which were much admired at the R.A.S.E. Show at Cardiff this year. There is no doubt they will come again, and it is desirable that they should take back a few mares worthy to compare with Lord Stalbridge's *Pigeonnette*, and some stallions to rival Mr. Henry Overman's *Misanthrope*.

The fact that a class for breeders of the Percheron appeared on the programme of the Cardiff Show is of the greatest importance for the horse industry of France, and it affords me the liveliest satisfaction to be able to state that this first attempt succeeded as well as one could possibly have wished.

Although, on account of a very marked difference in age, the class of stallions lacked uniformity, it had nevertheless some very good exhibits, among which was *Misanthrope* of whom I have just spoken, and who represents the type of good and pure Percheron. He was far before the other exhibits of whom the black *Parbleu*, who belongs to Captain Wickham Boynton, and whose smaller size caused him to be placed rather lower than he deserved, recalls the type of a certain small Percheron of former times.

The class of "Barren or Maiden Mares" was as a whole very superior to that of the stallions and was a good representation of the race as it is to-day. Among her beautiful companions

Pigeonnette was undoubtedly queen. It is rare to find a Percheron mare in whom is combined so happily, strength, symmetry, and energy; amongst the other exhibits Mr. John Drage's *Oie*, in spite of her rare distinction, could only claim to be her maid of honour, as was also the case with Sir Henry Hoare's very good *Livourne*.

America, even before England, recognised the merits of the Percheron. In 1839 Percheron sires began to be exported to the U.S.A. The movement began on a modest scale and originated with the good impression made on an American traveller by the horses pulling the stage-coach in which he was a passenger. This initiative had at first few imitators and even in 1870 only forty Percheron stallions and twenty-one mares had been imported. They were distributed to Ohio, Illinois, Maryland, Kentucky, and Massachusetts. From that time onwards the movement became really active, and progressed with giant strides until 1890, the time of the economic crisis in U.S.A. It resumed force again and reached the enormous pre-war figures of about 2,000 a year. In 1878 the Percheron Stud Book of America was instituted. Under the aegis of the Horse Society then founding its court in U.S.A., it became of great use in the development of the trans-Atlantic race.

"On the 1st of December, 1910," says M. de Chevigny, on returning from a mission to U.S.A., "the Percheron Society of America numbered 3,000 members; on October 1st, 1914, it numbered 6,420, of whom 880 were newly inscribed during the past year. To-day it is the richest and most powerful horse breeding organisation in the world. It is well managed, includes the best and most important breeders, and is administered by a young general secretary of tireless activity and communicative confidence; the Society represents a powerful force. Certainly, the Percheron vogue is partly due to its efforts. Now that the result is achieved, even the enemies of the French draught horse acknowledge its supremacy. At the last Chicago horse show, half the entries were Percherons."

"In every state it out-numbers all other draught breeds combined; sixty-four per cent. of all the pure-bred draught stallions in use in the ten leading states are Percherons."

"Percheron leads.—Percherons are the leading draught horses of the world. They constitute fully two-thirds of all the pure-bred horses in the United States."

"The Percheron is to-day the most popular breed of draught horses in the world, is more widely distributed than any others."

These quotations are taken at random from American periodicals or breeders' journals of every kind and in various districts.

"In this country where everything is matter for record the maximum prices are quoted as being obtained by the best animals, and the stallions at the head of the line are known everywhere: so Jalap, Dragon, Imprecation, Carnot.

"Across the Atlantic, in breeding and farming districts, the Percheron cross has given excellent results superior to those obtained with other breeders.

"At the end of 1914 (M. de Chevigny is still speaking), when the Allied Nations began their immense purchases of artillery horses in the new world, the Shire had a fair field. After the first crossing he became thick and clumsy, with hairy legs. English purchasers, accustomed to this model, had a marked preference for the big heavy horse of the type nearest to the English dray or plough horse. The Shire is always bay and does not reproduce greys; now all the purchasing commissions in America, except perhaps the Italians, refused light colours or at least only took them against their will and in a certain proportion. Finally, of all purchasers, the English paid the highest prices for artillery and transport classes. In spite of all these points in his favour, the Shire did not win the game. Dealers and capable breeders have told me a hundred times that the big dray horses they were providing had not sufficient quality, not enough resistance to strain, and had to be too well fed. They did not stand transport well, nor changes of food and climate. Many English buyers arrived at the same conclusion. It tallies with experience at the front.

"In Canada the Percheron has so far not found as many partisans as in the U.S.A. The Canadian Association of Percheron Horse Breeders numbers 306 members, while the analogous Clydesdale Association numbers 2,401, and the Shire Association 125; the Percheron is not much known in districts where breeding is most plentiful, and the imported horses come from the U.S. They are often of poor quality. In this Canadian country, as vast as the U.S., that is to say as large as Europe, there is active breeding of the draught horse in the province of Ontario, and notably round Toronto where, by reason of the proximity of the great lakes, the climate is less cold but damper than in Quebec and Montreal; the soil is richer, farming better, and grass more plentiful. The Clydesdale is successful there; out of the 2,401 Clyde breeders, 1,423 inhabit Ontario, and it is in the west of Canada, in Alberta, Manitoba, and Saskatchewan, where a more rustic animal is needed, and one steadier and more hardened to climatic variations, that the Percheron resumes his rights and that his breeders are most numerous."

After the U.S., but much later, the Argentine came to Perche for breeding stock. About 1884, for some seven years,

M. Aveline, President of the Percheron Hippic Society, used to export regularly a few horses which he sold to a Frenchman owning vast territories at la Plata. Towards 1904 the movement was resumed and went on increasing until the war. The Argentine paid us 20,000 francs and even 25,000 francs for certain stallions, and 5,000 to 10,000 francs for several mares. They particularly want grey coats and energetic appearance, and ask neither excessive size nor weight.

While imports of Percheron sires to Buenos Aires increased, those of other European draught races diminished. In 1906, 210 Clydes had been brought from England, and in 1907 this figure had fallen to 146, and in 1908 to seventy-three. For the Shire these figures were sixty-nine in 1906, fifty-nine in 1907, fifty-three in 1908. Since then, the demand for animals of these two races does not seem to have increased.

It is stated that the Transvaal War contributed largely to the fashion for Percheron horses in Argentina, where until then it was but little represented. Among the numerous artillery and transport horses bought in La Plata for the English Army in South Africa, the superiority of grey Percheron half-breds over the descendants of the more exacting and less enduring Shires and Clydesdales was placed on record—as later on the French front.

The Rural Society of Buenos Aires has for the last ten years inscribed Percheron classes, judged by an agent of the French studs, at its magnificent annual show. The result is great emulation between breeders and importers, and these exhibitions have led to the introduction of several of the finest prize-winners at the Central Show at Paris, bought at very high prices by rich Argentine breeders, Messrs. De Anchorena, Saenz Valiente, &c., &c.

Conclusion.—To sum up, the Percheron race is incomparable. No other race succeeds in showing such happy proportions of weight, energy, activity and endurance. It is interesting for its age, purity, homogeneity and stability. If formerly, according to the exigencies of the time, crosses were attempted with larger and heavier stallions, this was only done on a very small scale, and as it were, temporarily; the only method of production practised in Le Perche is that of rigorous selection.

The race, having been preserved from any *mésalliance* by its stud book, owes its good qualities to the soil and climate, and to the rural economy which ensures for it both peculiarly favourable conditions of feeding and hygiene, and also healthy and invigorating work, which is a necessary guarantee of its perfect fitness for rapid traction of heavy loads.

By reason of its purity and age, it is gifted with considerable hereditary power. Hitherto, wherever it has been able to increase under favourable conditions it has succeeded, either in reproduction, or in improving the stock; its vogue is historic and goes on increasing, both in France, in U.S.A., and in Argentina, and in that lies the best proof of these statements. The splendid performance of the Percheron and his descendants during the war has sealed the henceforth world-wide reputation of this fine race, thus celebrated by the *Breeder's Gazette* of America[1]: "First in war, first in peace, and first in the hearts of our countrymen."

A. OLLIVIER.

Nantes.

[NOTE.—The two photographs, Figs. 7 and 8, have been inserted in addition to those sent by M. Ollivier, as being of special interest to Members of the R.A.S.E. They are illustrations of the two first prize-winners at the Cardiff Show referred to on pp. 91 and 92.—ED.]

THE RECLAMATION OF WASTE LAND.

I.—THE GENERAL PROBLEM.

THERE are probably few subjects in connection with agriculture on which so much has been written and where so little has been actually achieved during the last few decades, as the reclamation of waste lands in this country. There is nothing new in the principle, for all agricultural land has been reclaimed at some time or other in the past, and in the earliest system of arable farming, known as "the wild field grass system," reclamation was indeed part of the regular rotation. Successive tracts of virgin land were annually or periodically brought under the plough, and these, when the soil became exhausted, were allowed to revert to grass. Doubtless many settlers or communities actually moved their place of abode to follow the newly-broken land. In course of time, however, the continuance of this system, combined with the growth of population, led to a limitation of the area readily available, and on this limitation or, in other words, on the fact that special areas of land became worth possessing, undoubtedly rests the origin of both permanent settlements and private ownership of land.

With these principles once established, the formation of the manor, or village, surrounded by its open arable fields and meadows was a natural sequence, but it is often forgotten that all through the middle ages the small block of reclaimed land encircling each settlement was bounded on all sides by rough commons and wastes merging again, in many localities, to the wild forests which, with their thick undergrowth, rough tracks and rougher inhabitants, must have made communication with other manors and the outside world slow and difficult.

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[1] Legend attached to a photograph in the "History of the Percheron Horse."

Unfortunately no accurate records are available to show the gradual increase in the extent of our cultivated land, but it is probable that the greatest onslaughts on the wastes were made during the periods of prosperity that ruled at the beginning of the 17th and 18th centuries, and the cultivated area was still increasing in 1866 when annual records were first obtained, and continued to do so until the great fall in agricultural prices brought the movement to a standstill in 1892.

AREA OF RECLAIMABLE LAND.

The area of cultivated land in England and Wales was estimated in 1688 at 21,000,000 acres; the heaths, moors and barren land at 10,000,000 acres. In 1808, Comber gave the figures as 29,013,000 acres under crops and grass, and 6,473,000 acres commons and wastes. In 1827 Conling, in his evidence before the Select Committee on Emigration, put forward the following estimates[1]:—

	England	Wales	Total
Arable land and gardens . . .	10,252,800	890,570	11,143,370
Meadows, pasture and marshes .	15,372,200	2,226,430	17,605,630
Uncultivated improvable wastes .	3,454,000	530,000	3,984,000
Unimprovable wastes . . .	3,256,400	1,105,000	4,361,400
Totals . . .	32,342,400	4,752,000	37,094,400

All these figures must necessarily be hypothetical, but in 1866 the first agricultural returns were obtained, and the extent of cultivated land (arable and pasture), from the succeeding year (in which the returns are generally held to be more accurate) up to the present time, is shown in the following table:—

	England and Wales Total area arable and grass land
1867	25,451,526 acres
1877	27,043,192 „
1887	27,753,207 „
1897	27,627,170 „
1907	27,376,969 „
1917	27,081,481 „

The agricultural statistics are unfortunately compiled in such a way that the actual area of uncultivated land cannot be accurately determined. The acreage shown under the heading of "Mountain and heath land used for grazing" is 3,901,713 acres in 1917 (England and Wales), but there is in addition to the above a large area unaccounted for in the returns (*e.g.*, 6,154,370 acres) which is represented by towns, buildings, railways, roads, public parks, &c., as well as rural land of so little value that it cannot be classed even as mountain and heath land used for grazing. Most of the reclaimable land, however, is probably included in the former figure except, presumably, common land which would not be likely to be entered in the returns made by any individual occupier.

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[1] Prothero, R.E., *English Farming, Past and Present.*

We have therefore no definite information as to the extent of either the total uncultivated land or the uncultivated land likely to be cultivatable in this country, but some estimates of the latter have from time to time been made. Sir Daniel Hall in his evidence before the Reconstruction Committee (Agricultural Policy Sub-Committee) tentatively suggested 250,000 acres as being the probable area reclaimable for agricultural purposes that would be disclosed by a close survey of Great Britain, and the same authority set forth, in the report already quoted, the nature of the various classes of land to which he referred, viz., (1) salt-marshes, (2) areas of blown sand adjoining the sea, (3) heaths, (4) low-lying moors and bogs and (5) upland sheep walks.

The total area of uncultivated land which is suitable for afforestation only is, of course, very much greater, but it is not proposed to deal here with this aspect of the question.

SOME CAUSES OF THE NON-UTILISATION OF LAND.

Before discussing the main types of derelict land, it may be well to set out briefly the possible reasons for land lying uncultivated in this country. In most cases, of course, there are several such causes responsible for the state of any particular area.

(a) *Apathy of Landlord, Tenant or Both.*—There are probably few cases where land has long continued uncultivated from this cause alone. Any apathy on the part of the owner or occupier is generally associated with the conviction either that the expense of reclamation is too high, or that the land is incapable of proper cultivation. Where no such disadvantage exists or appears to exist, there have always been found people ready to cultivate all available ground in the successive periods of high prices. Much of the land cultivated at such times has of course reverted to a derelict state, but low prices or increasing costs, rather than neglect, has usually been the cause.

(b) *Value of Land for Building Purposes.*—The recent large increase in allotments must have very largely absorbed the area coming under this heading, more especially in urban and semi-urban districts. There remains, however, in at any rate one rural district, viz., South Essex, two or three thousand acres which are fast becoming derelict through the operations of building speculators. Large tracts of land have been purchased and divided into small plots. Here and there a house has been erected, but by far the greater portion of the land lies idle. Owing to the houses scattered over the land, and to the large quantity of fencing erected to sub-divide plots, it is in practice difficult to bring the undeveloped land into cultivation even if it were possible to combine the ownerships involved, many of which are unknown.

(c) *Initial Expense of Reclamation too Great.*—This may be taken to be the determining factor in all those cases where the land itself is of good quality, as opposed to those cases where the land itself is poor and the recurring expenses of cultivation or probable low yields obtainable become the principal deterrents to cultivation. Where engineering or constructional work has to be done, such as drainage outfalls, embanking from the sea, &c., the initial costs which may be too great for an individual can sometimes be reduced by combination and by making the improvement effective over as large an area as possible. In other cases, such as clearing from tree stumps and bushes, and underdraining, no such alleviation is possible. Some of the cases where expensive constructional work is required are amongst the most promising from an economic point of view.

(d) *Invasion by Sea Water.*—The estuarine and salt marshes provide the principal example of cases where good land is available but calls for heavy initial expenditure on works of construction.

(e) *Elevation*, (f) *Isolation.*—These two conditions are usually associated, but both can to a certain extent be overcome, the former by the planting of woods and shelter belts, the latter by settlement schemes on an extensive scale.

(g) *Mechanical* and (h) *Chemical Properties of the Soil.*—These two causes of land remaining uncultivated are also associated, and indeed are closely allied with a third, viz., bacterial activity. No examples in this country are known to the writer of good free working land, neither so light as to be unduly subject to drought nor too heavy for fairly easy working, that has remained out of cultivation on account only of its deficiency in one or more chemical constituents necessary to fertility. But in spite of this, the lack of knowledge of the chemical requirements of soils may be put in the fore front of the causes of derelict land, for on the very heavy and more especially on the very light lands it is by chemical assistance only that the inherent disadvantages of mechanical condition may be rapidly overcome. It is the realisation of this fact which has been the basis of reclamation work on the Continent. "In Great Britain," to quote again from Sir Daniel Hall's memorandum,[1] "no advance had been made upon the methods in vogue at the beginning of the 19th century; the land was drained where necessary, the rough vegetation was burnt off, the soil broken up, the only treatment other than mechanical being a dressing of lime. Once cleansed the land was put under the ordinary crops, with, as a rule, extremely poor results for many years, though eventually by dint of perseverance and an annual expenditure that was in the aggregate considerable, though perhaps not large in any one year, the land accumulated fertility and became a paying proposition, like the little farms one sees everywhere bitten out of the waste on the flanks of the New Forest, on the Bagshot Heath, and the Surrey wastes. The German land reclaimers, on the other hand, have recognised that the natural infertility of the heaths and moors is in the main due to their deficiency in mineral salts—lime, phosphoric acid, and potash—and after the mechanical operations of drainage and clearing had been effected they set themselves to remedy this deficiency by an initial expenditure on fertilisers that would appear to a farmer enormous for such land, but without which even a moderate crop cannot be grown. In this way the land at once becomes capable of yielding a living return for the labour of cultivation, the initial outlay on basic slag and kainit proves to be much less costly than the recurring losses involved in growing crops with no special manuring until some sort of fertility is built up. Indeed, in many cases one sees that the existing farms reclaimed from heaths in Great Britain are still suffering in part from their original deficiencies; their productivity is at a low level because even after half a century or more of cultivation the soil is still short of lime, phosphoric acid, potash, sometimes of one constituent, sometimes of all three."

(i) *Existence of "Common" Rights.*—It is surely a striking commentary on our powers of organisation and co-operation in this country that a "common" is almost synonymous with "waste land." It is true that in a very great number of cases the worst land in the district is all that has escaped enclosure; that it is now common property because no one in the past thought it worth while to enclose, purchase, confiscate or otherwise obtain possession of it. There is undoubtedly, however, a large area of "common" land capable of immensely increased production. Those commons which provide pasturage of any value are usually overstocked, and even when "stinted" (*i.e.*, the head of stock regulated) they have mostly been fed off for years without any return being put back in the land. Few animals that graze the commons receive at the same time any artificial food, and the difficulty of obtaining contributions from all commoners prevents any manures being applied.

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[1] Cd. 8277.

There is in existence a Society for the Preservation of Commons and Footpaths. The aim of this Society is to preserve for the general public the open spaces that are still accessible to all. Few will quarrel with such an aim; but one cannot forbear to suggest that both the functions and the position of the Society might be greatly strengthened if it would undertake the Preservation *and Improvement* of Commons. There is real need for, and real useful work awaiting, a body who would undertake the work of endeavouring to make the best possible use of the commons in this country. A purely agricultural body might be tempted to regard all commons from the point of view of food production, whereas the claims of the health and recreation of town-dwellers and holiday-makers, as well as the preservation of the natural beauty and wildness of our country, must not even in these days be disregarded. The Society already mentioned exists in order to safeguard these less material claims, and would be likely to be in constant opposition to those who regarded the matter from an agricultural point of view only. What better course is possible, therefore, than that they themselves should add to their activities the task of improving and regulating such areas as they consider are available for food production. By reason of their present aims and constitution they possess the confidence of the commoners and of those who are especially zealous for the preservation of the beauty and health-giving amenities of our open spaces. They are also conversant with the legal complications relating to commons and "common" rights. By taking in hand, in conjunction with the commoners, the improvement of those commons which either by their character, situation, or condition, should clearly be devoted primarily to food production, they would not only strengthen their position regarding the other side of their programme, but confer immense benefit on the small cultivator and increase five or ten-fold the productivity of most commons. The question of reclamation of any land subject to "common" rights might well be left to such a body.

(j) *Joint Rights or System of Land Tenure.*—In some cases, areas of land have been left, or have become, unenclosed which are not subject to legal common rights but have by custom or decision of the landlord been allotted to two, three or more farms or persons as a common grazing ground. Such procedure tends to the neglect of such land, for no one wishes to spend money in improvements the benefit of which he has to share with others, and co-operation in such matters is not yet very usual.

Short leases, insecurity of tenure, and the fear of a rent increased because of their own improvements have doubtless debarred some tenants from embarking on the reclamation of uncultivated land; but it is worthy of note that much of the addition to the total cultivated area recorded during the 19th century was achieved by the enterprise of tenant farmers.

(k) *Lack of Drainage.*—This is, of course, one of the commonest causes of land remaining derelict and generally implies heavy initial expenditure.

(l) *Reversion to Undergrowth.*—This represents a condition rather than a cause of derelict land. Many of the heavy clays throughout the country, as well as some of the lighter soils in certain localities, appear especially liable to become "bushed" when neglected, the species of undergrowth varying with the nature of the soil.

(m) *Use for Sporting Purposes.*—In one district of England, namely, the sandy heaths of Norfolk and Suffolk, land under the plough is worth more on account of the sporting value than of its agricultural value, and the farming programme is in many cases based on consideration of shooting policy rather than on food production. Shooting is thus an indirect contributory cause in this case for much of the adjoining land remaining derelict, for a prospective reclaimer would have to pay a price greatly in excess of its productive value. There may be some small areas on the fringes of the moors in Yorkshire and Cumberland where the same conditions rule, but generally speaking it cannot be said that shooting or even game rearing has retarded the extension of the cultivated area in this country.

(n) *Previous Mining Operations.*—In certain parts of the country small areas lie derelict to-day because the land in the past has been worked for minerals, leaving the surface covered with irregular holes, heaps and trenches. In the course of working, the surface soil must necessarily become buried, so that in most cases the land would not become productive for several years, but it would appear reasonable that in the future the ground should at any rate be left level on completion of mining operations, and it is difficult to see why such a condition should not be inserted in all grants of mineral rights, and be enforced by legislation on owners.

As already pointed out several of the above causes have usually to be combined to account for any given area of land being still uncultivated; but having thus briefly enumerated them it is possible to pass on to a few of the main reclaimable areas which are found in England and Wales to-day.

MAIN AREAS OF RECLAIMABLE LAND.

(a) *Salt Marshes.*—The possibilities of this class of land have been fully explored by the Royal Commission on Coast Erosion,[1] the Agricultural Reconstruction Committee,[2] a Departmental Committee on the settlement and employment on the land of discharged soldiers,[3] the Development Commissioners, the Land Reclamation Society and other official bodies.

The three fundamental factors regarding direct reclamation from the sea are (1) the cost and stability of the bank, (2) the length of the bank necessary to deal with any given area, and (3) the "ripeness" of the land for enclosure. Reclamations of the past provide examples of mistakes made in connection with all these considerations. An early attempt by the Norfolk Estuary Company to enclose a very large area on the Wash resulted in the bank being washed away almost as fast as it was erected. Even had this not been the case, the engineering difficulties and extra cost involved in the "closing" of a bank which deals with a large area limits the size of an economic enclosure; the scour of the outward flow of water through the narrow aperture of the partly completed bank renders special measures necessary, or alternatively several working faces and several outlets, requiring great numbers of men to close all of these simultaneously. It is considered that in the absence of special circumstances about 500 acres is the largest area that should be dealt with in a single enclosure. The cost of enclosure will very largely depend on the length of bank required per acre, so that for economic results it is essential that work should not commence until a sufficiently wide stretch of foreshore is ripe for enclosure. It is most essential that land should not be taken in before this is the case, for it takes many years of manuring and cultivation to bring it to the same pitch of fertility as is immediately existent in land really ripe for enclosure. The rate at which land is built up can be hastened by artificial means. Accretion takes place by the deposition at slack high water of silt particles brought down by the rivers, these particles being left on the estuarine flats by the receding tide. The cutting of straight channels across the flats concentrates the scour of the receding tide to these channels, thus reducing the scour on the intervening areas and the consequent washing-away of particles from them. Again, the erection of wicker hurdles or rough dams with outfalls across the creeks not only reduces the scour in the creeks, but holds up the water for a longer time, and thus increases the number of particles deposited. The planting of Spartina grass—as introduced on Southampton Water by Lord Montagu of Beaulieu—has the same effect, by holding up the water, reducing the scour, and entangling the particles of silt.

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[1] Cd. 5708. [2] Cd. 9079. [3] Cd. 8277.

In estuaries where the quantity of silt brought down by the river is heavy, this process is carried a stage further by means of the practice called "warping." An area, not necessarily ripe for cultivation, is enclosed and fitted with sluice gates. The silt-laden water admitted by spring tides is retained by means of the sluice gates, and in this way as much as a foot per annum of rich alluvial silt can be deposited evenly over the area.[1]

The principal estuaries where land is available for reclamation are the Humber (whose rivers drain one-fifth of the total area of England, much of which is most fertile land), the Wash, Southampton Water, and to some extent the Severn, the Exe, the Tamar, the Dee, and the Thames. There are in addition estuarine marshes in Wales and on the north-west coast of England, the possibilities of which do not appear to have yet been fully explored. The Trent and the Wash, however, by reason of the fertile areas they drain, are the most promising, and the gaining of land from the sea has been going on from time to time in both estuaries from very early days. On the Trent, warping has been found most successful, owing to the high percentage of silt suspended in its waters, and the resulting land is remarkably fertile. The recent history of reclamation from the Wash is largely the history of the Norfolk Estuary Company, which for the last sixty years has been engaged in this district, and a full report of their work will be found in the report of the Royal Commission on Coast Erosion. The company were hampered at the outset by an obligation into which they entered to construct a new channel four miles long from Lynn to the sea before embarking on any reclamation. This channel cost 280,000*l.* to complete, which was more than half their capital, and its maintenance remained a permanent charge on the company's funds. Their next step, as already mentioned, was to attempt to enclose a large area by means of a single bank, which was washed away as fast as it was made. As the report states, "several obligations besides that of keeping open the channel from Lynn to the sea have been placed upon the company. These have proved a great drawback to the completion of its work; moreover an immense amount of money has been expended with practically no return, with the result that whereas, when the company was formed, it had ample capital with no experience of the work of reclamation, now that it has acquired experience it is in the unfortunate position of having no capital." Some 2,200 acres have, however, been reclaimed and sold at an average rate of about 25*l.* per acre.

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[1] The rate of accretion depends on the quantity of suspended matter with which the water is charged, and also on the original level of the land over which the water flows, since on this depends the depth of the water and in consequence the amount of suspended matter available. Full particulars of the principal methods practised are given in Beaseley's *Reclamation of Land* and Oliver's *Tidal Lands*. Papers relating to the subject can also be found in the Transactions of the Surveyors' Institution, X. 40, XV. 312, the Proceedings of Inst. of Civil Engineers, XLVI. 67, and in the Journal of the R.A.S.E., Vol. 73, p. 104.

Some idea of the normal rate of accretion on this shore can be obtained by a comparison between the 1 in. plan of 1852 drawn up in connection with the Lincolnshire Estuary Enclosure Act of that year and the 1 in. ordnance map revised 1906—7. The area of land between the high water marks as mapped on the two dates is about 1,400 acres between the River Witham and Gibraltar Point, a stretch of coast of about 15 miles. About 64,000 acres altogether have been reclaimed from the Wash since the construction of the Roman Banks 1,700 years ago.

Another area which may be mentioned as coming under the heading of estuarine marshes is Borth Bog, a triangular tract of about 4,500 acres of marsh lying on the southern shore, Dovey Estuary, Cardigan, and bounded by the mountains that rise abruptly to a general level of about 1,000 feet. The history of this area is interesting, and has been carefully studied by Professor Jones and others.[1] At the close of the glacial period, the surface soil of this valley was composed of a stiff blue clay, with abundant boulders derived from more northerly localities. The action of tidal currents and the prevalent south-westerly winds has caused material to drift northward along this part of the coast, and in course of time a storm beach has grown across the mouth of the estuary, the material for which was doubtless derived from the weathering of the cliffs to the south. The wide estuary mouth has thus been cut off from direct access to the sea except for the main river, which has cut its way through the soft glacial deposit. The remaining area at first doubtless became brackish and formed a low-lying marsh or shallow lagoon. It is now partly silt flats exposed to flooding by land and sea water, and partly an almost impenetrable peat bog, but the whole area could by comparatively simple means be reclaimed.

(b) *Sandy Heaths.*—The two main areas of this class of land which are fairly free from timber and present opportunities for large scale operations are (i.) the extensive heaths in Norfolk and Suffolk (Thetford, Brandon, and Woodbridge districts), and (ii.) the Dorset heaths, which cover a considerable portion of the Isle of Purbeck and extend north to Bere Regis, Wimborne and Bournemouth.

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[1] *Journal of Ecology*, IV. 1 and V. 2.

The former consist of Sandy drift overlying the chalk, and are situated in a part of the country where the rainfall is low. As already mentioned, the value of the land is greater for sporting than for agricultural purposes. Small reclamations would also necessitate wiring against rabbits which are everywhere abundant. Crops on the land now under cultivation are generally very poor, except in the wettest of seasons. In 1913 the Development Commissioners took over some 100 acres of derelict bracken-covered heath for experimental reclamation on the lines indicated in the extract already quoted from Sir Daniel Hall's memorandum. The land was cleared and heavily dressed with the appropriate artificial manures and suitable crops grown. Satisfactory yields have resulted, as well as very fair profits, but since the latter have been obtained during the war years on rising markets, no very definite conclusions should be drawn from them. So evident is it, however, that satisfactory cultivation can be carried on on such land that the holding has been enlarged from 100 to 1,000 acres, and valuable results and data should be soon forthcoming. It must be remembered that the heavy annual outlay required in artificial manures is to some extent counterbalanced by the low price of the land if only it can be obtained at its true agricultural value, and by the cheapness of cultivating and keeping clean such a light and free-working soil. It is essential to success, however, that the necessary chemical manures be supplied in such quantities as in ordinary farm practice would be considered most extravagant, that the principles of dry-land farming be followed so as to conserve as much as possible the moisture existing in the land, and that the cropping be really adapted to the soil.

The heaths in Dorset have the advantage of being of less value for sporting purposes, but their surface is more undulating and broken, and a considerable amount of preliminary draining would in most cases be necessary. The whole district is situated on the Bagshot Beds of the upper eocene, and possesses a light soil composed almost entirely of sand, with occasional patches or layers of gravel and indurated sandstone covered by a layer (varying from an inch to a foot, but most commonly about 4 in.) of humus of the usual peaty structure associated with heather. The position is complicated by the presence of the Bagshot Clays which underlie the sand at varying depths, and which occur superficially in patches throughout the area. The sandy soils are entirely devoid of all grass except in areas recently, or consistently, burned. The lower lying heaths are wet and swampy and show more herbage and rushes. The treatment necessary would in all respects be similar to that for the Norfolk and Suffolk heaths, but their present state is, if possible, even more barren and infertile : a larger area would have to be devoted to afforestation.

(c) *Upland Moors and Sheepwalks.*—The large stretches of country that come under this heading present difficulties of elevation and isolation. The former is really the determining factor, for isolation is usually the result, seldom the cause, of derelict land, except as regards small pieces of good land found in the heart of an uncultivated area. The main point is that moorlands lying much above the thousand feet contour cannot as a rule be profitably planted. Trees will grow, of course, at a much higher elevation, and where sheltered will flourish, as evidenced by the large tree stumps found on the Scottish mountains. But speaking generally, afforestation is not an economic proposition above, at any rate, the 1,200 feet line, so that the planting of shelter belts is usually impracticable. Much can doubtless be done in the direction of improving the herbage of hill-grazings by drainage, manuring, and special seed mixtures, but this is a separate and a very large subject, the possibilities of which have as yet been very little explored. The Westmorland and Cumberland hills, the Peak District, the Yorkshire Moors, the Welsh Mountains and Dartmoor and Exmoor are examples of such areas, though the two last named, and some portions of the others, present problems in connection with the reclamation of rainwater peat which are even more complicated. The experiments now being carried out by the Duchy of Cornwall on Dartmoor should yield results and information of great interest. It is probable that the most that can or should be attempted at present in connection with all these districts is to push the fringes of cultivation more deeply into their lower slopes. On most hillsides the limit of cultivation is not uniform with the contour. There is often a reason for this, such as variation in shelter, depth of soil, or slope of the land. But there is often no reason, and a careful survey should disclose considerable areas worthy of enclosure.

(d) *Moors and Downs at less than* 1,000 *feet elevation.*—There are, however, many moors and downs at lower elevations which remain out of cultivation. The outstanding advantage of such is, of course, that they are usually plantable throughout their area. Their steep valleys can be utilised for woods, their desolate appearance can be changed by a generous introduction of trees into the landscape, and woodland belts can make arable cultivation and sheltered grazing possible. At moderate elevations, arable cultivation should be accompanied by care as to crops grown and variety of seed used, early maturing strains being of the greatest importance. There is no doubt that there are many such comparatively low-lying ranges at present of little or no productive value that are capable of being entirely brought under arable or grass land cultivation. There are more of these in Cornwall than in any other county, but Devon, Wales, and doubtless many other districts can provide examples. Each such area, however, requires individual and most detailed examination before any decision is taken as to whether it is worth reclamation, as to the respective limits of agriculture and afforestation, and as to the best method of reclamation to be pursued. Most of them are deficient in lime, some possess an iron pan which holds up the water and tends to the formation of peat; others suffer in a similar way from a closely packed layer of igneous stones a few inches below the surface, which produces the same effect. Open or under-draining is in many places necessary, and in Cornwall some levelling of the unevenness of the ground caused by old workings for minerals.

(e) *Low-lying Bogs.*—There are in England one or two large areas of low-lying peat which present possibilities of reclamation. This is one of the main lines of work followed on the continent, where, however, there are often underlying strata at an easy depth which can be mixed with the superficial peat to form the working soil. This was done in the famous reclamation of Whittlesea Mere in 1851—3, when silt from the lake was spread over the surrounding peat to a depth of four and six inches. An interesting account of this type of work in Germany is given in the October number of the *Journal of the Board of Agriculture and Fisheries*, by Mr. G. B. Farlam, who worked as a labourer on the extensive land reclamation scheme of the Prussian Ministry of Agriculture on Ostenholzer Moor, Hanover, during three years' captivity as a prisoner-of-war. In Wales and some of the hilly districts of England are also to be found many valley bogs composed of what may be termed alluvial peat as distinct from the rainwater peat of the hills. The expense of drainage systems necessary is, of course, the bar to the reclamation of these potentially fertile valleys.

(f) *Bushed Land.*—Reference has already been made to the tendency shown by many heavy soils, especially those derived from the Lower Lias and London and Oxford clays, to become overgrown with thorn and other undergrowth when neglected. A considerable acreage must have thus become derelict in Essex. Cambridgeshire, Warwick and other parts. It is difficult when land has once become overgrown, to bring it back to its former condition at a cost commensurate with the value of the land.

Fortunately, advantage was taken in many counties of prisoner labour to get this work done, which entails in most cases hand grubbing of the thorns, heavy dressing with slag, followed by close and continual grazing. A similar tendency is observable on the light oolite land of the Cotswolds that has been reclaimed from the old Wychwood Forest, but in this case the nature both of the soil and the undergrowth renders the work very much easier.

(g) *Fixation of Sand Dunes by Planting.*—No account of reclamation would be complete without mention of the work of Coke at Holkham, the details of which, however, are too familiar to need description here. Certain areas still remain which could be dealt with by similar means both in Coke's own county and in Wales. The work of Professor Oliver of University College, London, in recent years on the fixation both of sand dunes and shingle beaches by vegetation is of equal importance, and is likely to have in the future a very real bearing not only on reclamation but on the protection from the sea of the existing coast line. His recent book "Tidal Lands" is a volume of profound interest to all those concerned with the constant problems presented by the accretion and erosion that is ever taking place around our shores.

STATE OR PRIVATE ENTERPRISE.

Coke's work provides a striking example of the local opposition to be expected. Probably no one of his generation was more freely criticised by contemporary agriculturists, and probably no one did more for agriculture. Similarly, of the reclamation of Whittlesea Mere, we read that the work was continued in spite of "the ridicule and opposition of the local population, who consider it a mad project involving great waste of money."[1] The expression of such sentiments regarding new undertakings is not absent even to-day, but the experience of the last five years has done much to convince the farming population generally of the possibilities of mechanical power and artificial manuring, and it is permissible to regard the advent of these new forces to agriculture as having no inconsiderable influence on the extension as well as the maintenance of the cultivated land of this country by bringing fresh tracts of land within the limits of potential profitable reclamation.

The advantage that is taken of these advances, however, must depend on the general outlook for agriculture and agricultural prices, just as any increase in or maintenance of the arable acreage is dependent on the prices, present and prospective, of corn. The initial expenditure involved in the reclamation of waste land is usually heavy, and those who embark upon such undertakings are proverbially more likely to enrich their successors than themselves. There is, in fact, little doubt that most of the land of England has cost more to reclaim, road, drain, and render accessible for cultivation than the land is now worth in the market, and it should be emphasised that not only is the farming of to-day the reclamation of yesterday, but that the total expenditure on improvements by successive landowners in the past must in most cases be more than the present value of the land itself, and would leave little or no balance for the so-called prairie value which looms so largely in the minds of some would-be reformers of to-day.

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[1] For some details of the cost of early reclamation works, see Albert Pell, *The Making of the Land in England*, Journal of the R.A.S.E., 1887, p. 355 —Ed.

Although there are a few tracts of land in England and Wales which it would pay the owner to bring into cultivation, there is undoubtedly a much larger area which, while capable of yielding him a satisfactory return from year to year when once reclaimed, could not bear the heavy charges of the initial operations. It is in connection with these latter areas that the question of direct action by the State arises. At the present time, of course, the financial condition of the country makes it imperative that government activities be reduced to the narrowest possible margin. There is normally, however, a strong case for some form of State assistance in bringing derelict land into cultivation. At first sight it would appear entirely undesirable to spend 30*l.* per acre on reclaiming land which when reclaimed is only worth 25*l.* per acre, but while this is so from the landowner's point of view, the State itself is in a different position, for the value of the land is only one portion (the landowner's share) of the increase in the total wealth of the nation which results from an addition to the total cultivated area. There is the tenants', labourers', wholesalers', retailers', and transport services' productive earnings to be considered, and the capitalised value of these may be added to the credit side before striking the balance sheet from the State's point of view.

Thus the State can afford to reclaim land at a higher cost than the individual landowner, although the additional return to the State is, of course, received indirectly only, and, since all reclamation in the past has been done by private enterprise, this has hitherto accrued to the country free of cost. In other words, landowners have been not only courageous but unwittingly patriotic in that they themselves supplied the additional capital so often necessary to bring fresh land into cultivation, the dividends on which have been earned not by themselves but by the nation.

It therefore follows that the possible gross return per acre from the land when reclaimed is a most important factor in considering reclamation from a national point of view. Land capable of producing fifty pounds worth of potatoes, for example, means greater wealth and greater total earnings to the nation than grass land yielding perhaps only ten to fifteen pounds worth of meat or milk, and it might be a sounder policy to spend 60*l.* per acre on reclaiming land that was worth 40*l.* than to spend 25*l.* on land that was worth 20*l.*

The State then can afford to spend more than the private landowner on reclamation, more especially on land capable of yielding a large gross return per acre, though exactly how much more it is difficult to determine, for this is presumably influenced by such complications as the rates of exchange, and the possible alternative earnings of labour and transport derivable from the handling of imported foodstuffs, or from other productive undertakings.

But there is a disadvantage in direct State action in this as in any commercial undertaking. It is impossible for a Government Department to do the work as economically as the private individual. Central control from London of undertakings scattered throughout the country, supervision by salaried officials, restrictions necessarily imposed on expenditure, and prompt decisions — all these unavoidable disadvantages inseparable from Government control operate against economy. But most important of all is the necessity of importing and housing labour. The private landowner or farmer, when other work is not pressing, can put a few men on to clear an acre or two, and transfer them back to their normal occupation as required. The Government cannot control or supervise any such piece-meal method, and alternatively would, in most cases, have to provide housing, import a considerable number of men, and get the work done as soon as possible.

In times of extensive unemployment, however, this very feature of being able to put considerable numbers of men on more or less unskilled productive work, may be of great social advantage, and should not be lost sight of.

In Continental countries, where settlement is closer and the demand for land greater, land reclamation has proceeded apace, as is shewn by the following figures[1] :—"In the small province of Oldenburg about an average of sixty settlers per annum were placed on reclaimed land between 1901 and 1910, but the numbers rose to 130 in 1910, and 166 in 1911, each colonist possessing some twenty to twenty-five acres of land that had been added to the cultivated area. So convinced of the economic soundness of the process had the State become that in 1913 the Prussian Diet sanctioned a loan of one and a quarter millions sterling, half of which was to be devoted to State schemes of reclamation, 150,000*l.* to drainage, and 500,000*l.* was to be used in subventions to provincial schemes of reclamation. This contrast between the action of the two countries is not to be accounted for simply by the difference in fiscal policies and the higher prices for agricultural produce ruling in Germany; it is in the main due to the fact that the Germans had studied the problem and were employing modern resources both in the way of knowledge and materials to the treatment of the land." Similar steps are being extensively pursued in Prussia, Bavaria, Austria, Denmark, Holland, Sweden and Belgium, in all of which countries reclamation is a definite part of the agricultural policy of the State.

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[1] Sir A. D. Hall: Cd. 8277.

The chief points, therefore, for consideration may be summed up as follows:—

(*a*) The operation of bringing into cultivation land that has hitherto been uncultivated is one that has been going on more or less continuously since the beginning of agriculture, and more than the present capital value of the land has probably been expended in the past by successive owners in its reclamation and improvement.

(*b*) In a closely settled country like England, however, most of the land showing obvious prospects of immediate profitable cultivation has already been reclaimed; in other words, there is usually some good reason for the condition of areas still remaining derelict.

(*c*) In most cases such land requires, in order to bring it into cultivation, an expenditure in excess of the immediate value of the land when reclaimed. This is especially so when the work has to be undertaken by the State. Private owners could, in many cases, do the work more cheaply, and in a few districts there is land which would pay to reclaim.

(*d*) On the other hand the State can afford to spend more on such work than the private owner, for the addition to the total wealth of the nation is greater than the mere value of the land.

(*e*) In times of industrial depression, the social advantages of providing employment may provide an additional advantage to the State to embark on such work when normal financial conditions recur.

(*f*) For the present, however, when maximum home production is so vital to our financial and social welfare, should not every land-owner and occupier consider whether he cannot add a little more to the cultivated area of the homeland. It may not pay him at once—perhaps it may never pay him; but it will pay the country. And let us not forget the debt we owe to past generations who have, often at a loss to themselves, brought the land we own or farm to-day to its present condition of productivity.

And as Sir Daniel Hall has pointed out,[1] "the full value of reclamation schemes is only apparent after the lapse of time, the true capacity of the land is only attained after many years of cultivation, the best uses to which it can be put in any district are only learnt by experience. Many of the advantages also are indirect; the land won is sheer gain to the cultivated area, no previously existing labour is displaced, the increased population provided for, the absolute addition to the production of food, and to the wealth of the nation, both by the commercial exchanges promoted and the new contribution of rates and taxes."

In conclusion, one cannot refrain from quoting the brilliant, and tactful, comment of a French agriculturist, who visited this country in the early days of the war, "England must indeed be wealthy—she can afford to leave so many of her acres uncultivated."

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II.—THE SCIENTIFIC AND TECHNICAL PROBLEMS.

DURING recent years there have been many advances in agricultural science which make it profitable to re-examine the old problem of land reclamation. The development of artificial manures has placed at the farmer's disposal means of fertilising land which he never had before. Plant breeders have evolved new strains capable of survival under conditions hopeless for the older types. Engineers have produced new machinery, harnessed it to new sources of power and thus made possible cultivations that could not have been undertaken with the older implements.

There is no hard and fast division between cultivated and waste land. The division such as it is falls in the poorer part of the land returned as being in cultivation, some of which is regarded as too poor to justify any expenditure on labour or manure, and is really waste. There is a considerable area of this which might well be improved, in addition to the large area of land not at present returned as cultivated.

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[1] Appendix to Report, Part II., of Departmental Committee on Settlement and Employment on the Land of Discharged Sailors and Soldiers. Cd. 8277.

In the present paper it is proposed to deal with the scientific and technical problems involved in the reclamation and particularly to indicate what soils can be dealt with on our present knowledge and what as yet cannot. In order to keep the discussion within reasonable limits attention is confined to the sands and the clays, the peats being left out of consideration.

Waste land may arise from three great causes :—

1. The land may be good in itself but unsuitable for crop production by reason of its low-lying position.
2. The land may be of a nature unsuited to the methods used by the local farmers.
3. The climatic conditions may not allow of the growth of the desired crops.

Faults of position may often be remedied : the draining of the fens and the embanking of Romney marsh afford excellent examples. Climatic conditions are in the main beyond us, something can be done to mitigate their effects by the selection of suitable varieties and by proper methods of cultivation and manuring. Our present concern is with the land lying waste because it is unsuited to the methods generally used in the district : it may be too light, too heavy, too stony or too acid, and we propose to inquire how far other methods are likely to succeed.

Light sandy or gravelly soils.—These constitute the chief part of the waste land of the Eastern half of England where the rainfall is less than thirty inches.

The most difficult light soils in the country to cultivate are the Bagshot and the Folkestone sands, large areas of which are waste. The Bagshot sands can be seen on the London and South Western Railway line between London and Basingstoke, or between Winchester, Bournemouth and Dorchester. The Folkestone beds can be seen round Haslemere and Leith Hill. There are other areas of very light sand in Norfolk in the Brandon and Thetford district, and in Suffolk to the east of the railway from Ipswich to Yarmouth.

In the case of light sandy soils the cultivation limit is set by the percentages of coarse sand and of clay. With a rainfall of less than thirty inches it seems to be reached when the clay falls below 1 per cent. and the coarse sand amounts to 60 per cent., or, as often happens in the Bagshot beds, the coarse and fine sand together exceed 80 per cent. of the fine earth apart from stones. At this point the question whether the soil is cultivated or waste depends entirely on its water supply, which in turn is determined by its position. Even this light soil can often be cultivated, if it is in a depression with higher ground about, but difficulties arise if it lies on the highest part of the ground. Instances may be quoted from the Folkestone beds in Surrey and Hampshire. The Shalford soil is well cultivated. the Liphook soil is from an almost derelict farm, Down Park is waste land. The percentage composition is as follows :—

	Shalford, Surrey (cultivated)	Liphook, Hampshire (a poor farm)	Down Park, Sussex (waste land)
Gravel[1]	2·5	1·2	0·8
Coarse sand	52·6	57·6	59·7
Fine sand	26·2	23·4	22·1
Silt	4·8	5·7	3·9
Fine silt	3·5	2·9	3·8
Clay	3·8	4·0	2·7

The soils are all near the limit in regard to coarse sand, though they are above it in respect of the clay. They are very similar in type ; Shalford is a little better than Liphook in its content of coarse sand, and both are superior to Down Park in percentage of clay.

There is, however, a considerable difference in position. The Shalford soil lies at a low level and receives drainage from the higher ground. Its water content is therefore not unsatisfactory. Green crops are grown and fed on the ground in winter to fattening sheep, whose droppings provide the necessary organic matter ; corn crops can then be taken, especially malting barley. This system is one of the best for light sandy soil provided the sheep can be economically managed, which usually means that the farmer must have heavier land elsewhere. Its drawback is, however, that it involves considerable working capital and a large risk that in dry seasons the food supply for the sheep may prove insufficient.

The Liphook soil had brought its owner no profit. It lies on a hill in an unpromising situation between the 350 ft. and the 450 ft. contours, and the utmost that could be said of it by the agent was that it had grown malting barley, which is not a very high commendation.

The Down Park soil was frankly waste ; no one had attempted to cultivate it. It is somewhat inferior to the Liphook soil ; it is no better situated in regard to water, and is just over the margin.

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[1] For the meaning of these expressions see the author's "Soils and manures," p. 16, 2nd. Ed. 1919.

Another instance is furnished by three soils respectively from Weybridge, Wokingham and Brookwood, on the Bagshot beds. The analyses are as follows:—

	In good cultivation, Weybridge	Poor cultivation, Wokingham	Waste, Brookwood	Usual for Bagshot sands.
Fine gravel	1·3	0·7	0·7	0·6
Coarse sand	38·4	40·4	16·6	16-27
Fine sand	39·9	33·9	64·2	47-66
Silt	5·6	11·0	7·1	5-10
Fine silt	5·1	5·4	3·9	4-9
Clay	3·8	0·9	1·0	1-6

All three are near the margin as specified above, and consequently their productiveness depends on the situation.

The Weybridge soil starts with the advantage of being on the right side of the margin, as it contains 3·8 per cent. of clay. It has the further advantage that it lies fairly low; the water level is near to the surface, and consequently there is a natural sub-irrigation which provides the crop with all the moisture needed. It is therefore very suitable for market-garden work, and its proximity to London enables the cultivator to dispose of his produce and to bring back quantities of town stable-manure. It also grows excellent wheat crops.

The Wokingham soil is just on the limit; it is less favourably situated than the Weybridge soil, although the water level is not very far down, only about 6 ft. below the surface even in periods of drought. By skilful management and the expenditure of a considerable amount of manure it might be made productive for market-gardening or for special types of agriculture, but it is not suitable for ordinary mixed husbandry. As a matter of fact it is in a very unproductive state, and no ordinary farmer would be likely to make much of it.

The Brookwood soil is situated at a higher level and is waste land, carrying only Scotch and Austrian pines. It might be farmed on the Methwold lines (p. 119), but would be unlikely to repay the heavy capital cost of clearing, levelling and laying out as a farm.

The Bagshot beds afford many instances of a serious fault of waste sandy soils—a tendency to form a pan at a distance of about a foot below the surface. Unless this pan is broken, little can be done in the way of reclamation, but the breaking is usually too costly to be attempted now-a-days on the old method, though it might be done by means of explosives.

Pan formation can also be seen in many places on the Suffolk and Norfolk heaths. Wherever it occurs, breaking has to be carried out or the land must be left alone.

An interesting group of soils is from Bushy and Richmond Parks. Geologically, the soils are alluvial, but they are very similar to the Bagshot sands, from which indeed they may well have been derived.

These soils were brought into cultivation in 1917 owing to the necessity for increasing the food production of the country. At the outset it was realised that the scheme started under the disadvantage of being four months late, which, if the season turned out dry, would cause the crops to suffer considerably more than if the land had been broken up earlier. The food situation was, however, deemed sufficiently urgent to justify the taking of the risk of a dry season.

The composition of the soils was as follows:—

SURFACE SOILS.

	Bushy Park.			Richmond Park.		
Laboratory number	74	75	77	94	90	92
Coarse gravel	0·7	0·5	0·6	1·6	0·3	3·0
Coarse sand	51·6	42·6	35·6	54·1	32·7	44·8
Fine sand	20·0	27·1	32·3	13·5	24·2	14·5
Silt	8·0	11·5	10·3	8·2	10·3	14·1
Fine silt	7·1	4·0	6·3	4·3	8·9	9·0
Clay	1·0	4·7	5·5	0·5	1·8	1·1
Organic matter	6·94	6·01	4·28	6·34	6·90	6·95
Nitrogen	0·19	0·21	0·13	0·20	0·16	0·21
Potash (K_2O)—						
Total	0·15	0·16	0·26	0·12	0·17	0·23
Available	0·015	0·013	0·01	0·02	0·014	0·014
Phosphoric (acid P_2O_5)—						
Total	0·1	0·08	0·17	0·07	0·04	0·08
Available	0·015	0·005	0·004	0·02	0·013	0·01
Carbonates	—	0·07	0·09	0·01	0·01	0·01
Acidity	Present	Present	Present	Present	Present	Present
Lime requirement	0·30	0·12	0·18	0·38	0·27	0·30

The figures show that the soils are all similar and of the Bagshot type, but fairly deep; all are distinctly better than those at Methwold and Icklington, in Norfolk (pp. 118 and 119), which are in cultivation. The Bushy Park soils 75 and 77 contain more clay than the Richmond Park soils, and in addition they are situated at a lower level, and so are probably more favourably situated in regard to subsoil water. The seasons of 1917 and 1918 were both dry, and as usual on light soils in these circumstances these differences in clay content and in position told considerably. The final results were as follows[1]:—

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[1] Cmd. 8996, 1918, and 114, 1919.

	Bushy Park		Richmond Park	
Season	1917	1918	1917	1918
Acreage cultivated	79	79	75	75
Expenditure	802*l.* 6*s.* 2*d.*[1]	1,242*l.* 10*s.*	634*l.* 0*s.* 1*d.*[1]	1,160*l.* 19*s.* 10*d.*
Sales and value of produce	907*l.* 10*s.*	1,897*l.* 15*s.*	247*l.* 5*s.*	1,030*l.* 1*s.* 9*d.*
Net profit	105*l.* 3*s.* 10*d.*	655*l.* 5*s.*	—	—
Net loss	—	—	386*l.* 15*s.* 1*d.*	130*l.* 18*s.* 1*d.*

[1] This does not include cost of seed, which was presented by Messrs. Garton. The value at Bushy Park was 116*l.* and at Richmond Park 110*l.*

	Bushy Park		Richmond Park	
Details of produce	1917	1918	1917	1918
Potatoes	—	292*l.* 5*s.*	—	245*l.* 12*s.* 6*d.*
Roots	—	313*l.*	—	192*l.* 9*s.* 3*d.*
Oats—grain	270 qr. @ 55*s.* = 742*l.* 10*s.*	177 qr. @ 60*s.* = 531*l.*	79 qr. @ 55*s.* = 217*l.* 5*s.*	76 qr. @ 60*s.* = 228*l.*
„ straw	Valued at 165*l.*	41 tons @ 70*s.* = 143*l.* 10*s.*	10 tons @ 60*s.* = 30*l.*	8 tons @ 70*s.* = 28*l.*
Wheat—grain	—	135 qr. @ 76*s.* = 513*l.*	—	75 qr. @ 76*s.* = 285*l.*
„ straw	—	35 tons @ 60*s.* = 105*l.*	—	17 tons @ 60*s.* = 51*l.*

In interpreting these figures it must be remembered that the prices were those fixed by Government, and had no relation to values as determined by the laws of supply and demand.

A similar gradation can be traced on the Norfolk heaths. Round Brandon there is a considerable stretch of heath land of the general type :—

	Per cent.
Fine gravel	2
Coarse sand	50—70
Fine sand	30—15
Silt	3
Fine silt	2
Clay	0·5—1·5

Much of this lies on chalk, some of it on Boulder Clay ; in places its extreme lightness is aggravated by the presence of many stones. Thus, round Lakenheath may be found fields that have been reclaimed from the heath and fairly well cultivated ; they have obviously justified reclamation. Others have been reclaimed but have had much less spent on them, and indeed hardly deserved as much as they received. A great part of the heath, however, is left unreclaimed. Three typical examples are as follows :—

Reclaimed			Waste land	
	Eriswell. Mangold field. Good soil	Icklington. Rye field. Poor soil	Lakenheath	Wangford
Fine gravel . . .	1·2	2·2	0·4	4·1
Coarse sand . . .	46·4	60·8	47·5	62·4
Fine sand . . .	35·8	30·5	47·4	25·7
Silt	3·5	0·8	0·6	0·2
Fine silt . . .	2·7	0·7	0·1	1·8
Clay	2·5	0·8	0·7	0·6

The Eriswell soil is the best of these, being below the limit in coarse sand and above it in clay. It is much better farmed than that at Icklington. A marl pit close by has been worked in the past, suggesting that the land has been clayed, thus further improving it. The 2·5 per cent. of clay present just allows of good cultivation, giving sufficient body to keep the sand together and to retain the moisture.

The Icklington soil is right on the limit in regard to coarse sand and clay; to make matters worse, it lies on the chalk; it must sometimes be a source of great anxiety to the cultivator, being very liable to suffer from drought in dry seasons. Its saving feature, and the one in which it differs from the two waste soils, is that it contains few stones. But for this it would be real waste.

The Lakenheath and Wangford soils are both waste, and could not readily be anything else. Lakenheath soil compares with that from Eriswell in its content of coarse sand, but it has less of the silts and of clay—only 1·4 of these instead of 8·7. Its worst feature, however, is its large amount of stones, not shown in these figures. The Wangford soil closely resembles the Icklington soil. Patches free from stones could be brought into cultivation, and would be as good as the Icklington soil, but that is not saying much.

The chemical composition of these soils affords a useful index of their state of fertility.

	Eriswell	Icklington	Lakenheath	Wangford
Nitrogen	0·121	0·045	0·089	0·056
Potash (K_2O)—				
Total	0·22	0·12	0·10	0·05
Available . . .	0·025	0·005	0·012	0·006
Phosphoric acid (P_2O_5)—				
Total	0·17	0·12	0·07	0·06
Available . . .	0·056	0·074	0·008	0·015
Lime (CaO)—Total . . .	2·26	0·62	0·42	0·04
Carbonate as $CaCO_3$ . .	3·1	1·1	0·51	0·03

These instances show that soils of the types—

Coarse sand 60 per cent. or more,
Clay 1 per cent. or less,

Coarse sand + Fine sand } 80 per cent. or more,
Clay 1 per cent. or less,

present considerable difficulties to the cultivator in the eastern half of England under a rainfall of less than 30 inches. The tendency has been to leave them alone.

Reclamation has, however, been successfully carried out by Dr. C. S. Edwards, at The Warren, Methwold, on a soil that comes well within this difficult type. The land lies seven miles north of Lakenheath Warren, which it somewhat resembles, except that it is less stony. It is much lighter than the Bagshot sands, and resembles the waste Hothfield Common, in Kent. Its composition is as follows :—

	Cultivated	Waste	
	The Warren, Methwold	Hothfield	Bagshot Heath
Fine gravel	3·9	0·1	0·7
Coarse sand	69·4	68·5	16·6
Fine sand	14·1	18·1	64·2
Silt	3·9	4·3	7·1
Fine silt	1·6	2·3	3·9
Clay	0·5	0·2	1·0

The general principle of management adopted at Methwold[1] is to grow suitable and saleable crops, especially peas and potatoes, giving to each crop the mixture of artificial fertilisers necessary to secure maximum development. Live-stock is not excluded, but is not the basis of the scheme, being adopted only in so far as is deemed profitable. For the same reason, green manuring plays no essential part, though as lucerne does well and yields valuable crops of hay, it will, no doubt, figure largely in the cropping programme and will, of course, gradually improve the soil.

Having regard to the fact that the Methwold soil is the lightest in cultivation (so far as I know), Dr. Edwards' published accounts must be regarded as distinctly satisfactory. The yields per acre are given as follows :—

Year	Wheat	Oats	Blue Peas	Potatoes	Roots (carrots &c.)
	bushels	bushels	bushels	tons	tons
1914-15	30·6	30·4	13	5	7·3
1915-16	43	63·1	21·5	3·6	9·4
1916-17	19	24	12·9	4·1	15·8
1917-18	40	44	23·2	2·5	10

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[1] For an account of Methwold, see *Country Life*, March 18, 1916, and also Dr. Edwards' published accounts.

Dr. Edwards' published accounts still further show that the cost of reclaiming the 158 acres in 1913-15 was 880*l.*; other expenses over the period have been 2,344*l.*, cost of cropping 6,469*l.*, making a total expenditure from the beginning in 1913 to the end of 1918 of 9,693*l.*; total cash receipts were 10,699*l.*, and other assets 2,567*l.*, making a total gain of 3,573*l.*

RECLAIMING OF SANDY WASTES.

Generally speaking, the defects of sandy wastes are as follows:—

1.—*Beyond remedy.*

(*a*) *Excess of stones.*—In this case the soil may be left alone or afforested, or if the rainfall is sufficient and the expense seems justifiable, it may be laid down in Elliot's mixture and used for grazing.

2.—*Remediable, but often very costly.*

(*a*) *Pan.*—Instances are recorded of heaths reclaimed by removing the pan, but the process was always laborious and possible only in times of cheap labour. Coxheath, Maidstone, affords a good example. Prior to its Enclosure Act of 1814 it was a waste of 900 acres; after trenching and removing the stone some of the land became fit to grow anything, and was before the War rented at 2*l.* per acre. Some, however, is still thin and hungry, requiring heavy manuring before profitable crops can be grown.

(*b*) *Lack of clay.*—In the days of cheap labour clay was often added to improve light sandy land. The classical examples are at Holkham, under Coke of Norfolk, and Woburn, under the then Duke of Bedford. For modern examples it is necessary to turn to the Continent, especially Belgium and Holland before the War. Here also the cost was considerable, even using cheap labour and modern developments, such as light railways, co-operative systems, &c.

3.—*Remediable at lower cost.*

(*a*) Lack of lime.
(*b*) Lack of plant nutrients.
(*c*) Lack of organic matter.

Chemical analysis shows that lack of plant nutrients is an important defect of sandy soils, and in Continental practice it is boldly made good by heavy dressings of artificial manures which would rather astonish some of our light land farmers. Two instances may be quoted:—Baylham, in Suffolk, and

Methwold, in Norfolk. The analyses of the soils are as follows:

	Baylham	Methwold
Organic matter	2·00	5·7
Nitrogen	0·060	0·15
Phosphoric acid (P_2O_5)—		
Total	·096	·10
Available	·015	·007
Potash (K_2O)—		
Total	·16	·16
Available	·026	·02
Lime (CaO)—Total	·20	·07
Carbonates as $CaCO_3$	—	·02

An interesting set of plots was laid out by Mr. Percy Dudding, at Baylham, in which a few promising varieties were grown in strips along the field and several carefully selected manurial dressings applied across the field. These showed that nitrate of soda proved most effective, raising the barley crop by 7½ coombs per acre. Salt (which acts like potash) also gave a good return.

The conditions of a light sandy soil tend to shorten the life of the plant; potash counteracts this tendency, keeping the plant alive and thereby enabling it to keep growing and make more material. Hence on these soils there is a marked need for potash, even when 0·02 per cent. or 0·03 per cent. of "available potash" is present. The amount of phosphoric acid is sufficient for low production, but insufficient when the productiveness is raised by the use of nitrates. Lime is needed, but the low quantity of organic matter is a warning that great care must be exercised, otherwise loss will result.

(*c*) *Deficiency of organic matter.*—This can usually be built up by—

1.—Sheep feeding.
2.—Green manuring.

Experiments at Woburn have shown the relative value of some of the crops for this purpose, and the sandy heaths of Germany, especially on the Lupitz Estate, have afforded instances of reclamation on a large scale.

THE DRAWING UP OF THE SCHEME OF RECLAMATION.

In drawing up the scheme of reclamation, the first essential is to discover the defects of the soil and then to devise schemes for remedying them.

Unfortunately, analysis by itself does not enable the chemist to do this with precision. Actual field trials must be made.

Analysis helps, however, by indicating the points on which the field tests should give useful information.

Two methods of procedure can be followed. A series of field trials drawn up on the basis of the analytical data may be carried out on a typical piece of the land to be reclaimed. This is the safest, but also the slowest method, requiring some years before it gives the required information.

The quicker method, which is nearly as safe, is to make a detailed comparison of the waste land with the cultivated soil immediately surrounding it; then, having found the differences, to consider the possibility of overcoming any important defects thus revealed. Thus, a comparison of the Eriswell and Icklington soils with the waste land of Wangford and Lakenheath (p. 118) shows that all the soils have a strong family resemblance; they pass by small gradations from the best at Eriswell to the worst at Lakenheath. The differences are not very great, and are clearly revealed by the analysis.

The main features in which the useful Eriswell soil excels the others are :—

(*a*) the amount of clay and fine silt,
(*b*) a smaller quantity of stone,
(*c*) the calcium carbonate,
(*d*) the plant nutrients.

The Eriswell soil contains over 5 per cent. of clay and fine silt; the Warren, on the other hand, only 0·7 per cent. In order to bring the waste soil to the level of the cultivated, it would be necessary to raise the amount of clay and fine silt by 4·3 per cent. There is at Eldon a brickyard which at first sight might seem to supply all that is wanted, and a good deal of expense might be incurred by well-meaning attempts to clay areas of the heath. Unfortunately, analysis shows that, while suitable for brick-making, the Eldon "clay" contains very little of the materials needed in the soil. The fine silt, it is true, amounts to 36 per cent., but the true clay is only 0·7 per cent. More than 150 tons per acre would be needed to effect the required improvement, and the cost would be prohibitive. On the other side of the river, however, there is a clay containing 31 per cent. of fine silt and 24 of true clay; of this 40 to 80 tons per acre would be required.

The good soil contains over 3 per cent. of calcium carbonate; the waste soil only 0·03—0·5 per cent. It would be unnecessary to work up to 3 per cent. which has probably accumulated through dressings of marl. Some 10—20 tons of chalk would, however, be necessary, but it could be applied easily as the chalk lies near the surface. Further, there is a deficiency in plant nutrients, but this can speedily be made good by the use of appropriate fertilisers.

METHODS OF FARMING RECLAIMED SANDY LANDS.

Three methods may be adopted for farming reclaimed sandy lands :

1. *Winter feeding of sheep.*—This is a standard method in this country. It is well developed on the light sands round Guildford, in Surrey. Where for sufficient reasons cattle are preferred silage should be produced for them in place of roots, as is now being done in parts of East Anglia.

2. *Market-gardening.*—This is successful in flat low-lying areas where transport facilities permit of the disposal of the produce. Excellent examples can be found in the Biggleswade and sandy districts of Bedfordshire on the Great Northern Railway line.[1] Nursery stocks of fruit trees and shrubs do well ; examples can be found in the Woking district.

3. *Special crops.*—Crops are grown specially suited to the conditions using appropriate mixtures of artificial manures for each one. This is practised at Methwold and is quite consistent with the keeping of livestock. It requires, however, an intelligent use of artificial fertilisers so as to reduce to a minimum the possibility of loss : the manurial dressing must suffice for the crop, but no residual effects need be expected.

Suitable crops are peas, potatoes, tobacco, rye, and other cereals. Early sowings and plentiful cultivations are necessary and special care should be taken to select suitable varieties. Game often proves a terrible nuisance.

THIN SOILS OVERLYING CHALK.

Considerable areas of the South Downs and of their extensions across Hampshire, Wiltshire, &c., are covered with a thin soil and carry herbage used only for rough grazing. Two methods of reclamation have been successfully adopted.

1. *Improvement of the herbage.*—This is possible no matter how thin the staple. The best known example is Professor Somerville's farm at Poverty Bottom, Newhaven, where striking improvement was effected in the herbage by the liberal use of basic slag.[2]

2. *Conversion into arable land.*—This method may be adopted where the soil is six or more inches deep ; its chief exponent is Mr. James Falconer of Micheldever, Hants[3]. His farm is 1,000 acres in extent ; it formerly maintained a breeding flock run as usual on the downs by day and folded on green crops by night. Mr. Falconer substituted for this a fattening flock. In order to provide the necessary food he has ploughed

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[1] See the Survey of this district by T. Rigg, *Journ. Ag. Sci.*, 1916, 7, 385-431.

[2] For detailed account see *Journ. Board of Agric.*, Feb., 1918.

[3] *Journ. of Farmers' Club.* March, 1917.

up the land, so that 80 acres only now remain in grass; he secures large green crops by means of heavy dressings of artificial manure, and in addition supplies cake to the sheep on the land; he therefore obtains good corn crops. The soil is a light stony loam about seven inches deep; it needs superphosphate for barley and potash for mangolds and potatoes.

CLAY SOILS.

The clay soils of this country have had a more chequered career than any others. They came early into cultivation and for many years held a higher repute than the light sands. Most, if not all, of the clays in the country have been under the plough at some time or other: even the heaviest had no terrors for the farmers of the 18th and the first half of the 19th centuries, who were well provided with labour and always sure of a market. The soils were pared and burned, laid up in high backed lands, treated with lime or chalk and put into wheat and beans. And the process paid, in spite of the drawback that five horses, a man and a boy, or else a long team of bullocks and two men, were needed for ploughing. A season was sometimes lost, a bare fallow was necessary every fourth or fifth year, and only the higher parts of the ridges bore a crop of any size, the furrows being too wet and unkindly.

Towards the end of the cultivation period the system of management often led to much impoverishment. Wide tracts of heavy clay are unusual in this country; generally the clay forms a belt fringed with strips of sand or an outcropping band of limestone. Travellers naturally prefer to walk on the sand rather than on the clay, hence the road follows the sandy fringe and keeps off the clay belt. For the same reason the farmhouses and buildings were put up on the sandy fringe. The straw and grain grown on the heavy clay were carted away to the buildings in the autumn while the land was still firm, but farmyard manure was not always carted back in winter, partly because of the difficulty of travelling over the land, and partly also because the dung gave much better returns on the sandy soil where swedes and turnips would be grown for the folding of the sheep. In frosty weather the clay might be limed or it might receive any farmyard manure that could be spared, but it was in the main cropped on an exhausting method.

Many illustrations of this can be found on the belt of Lias clay which stretches right across England, from Somerset to Lincolnshire. Thus starting out from Oakham in the Cottesmore and Market Overton direction the heavy yellow Upper Lias clay lies to the left of the road, while the road itself and the farmhouses keep to the Northampton sand of the Oolite series, a red, free-working, responsive soil that tempted several generations of cultivators to put all their manure into it. Hence the clay is now in a poor state while the sand is much better.

Further illustrations can be found in the Weald of Kent. This is fringed by the very responsive Hythe beds, which therefore tend to receive better supplies of manure than the heavy Weald soil.

In other places clay contains layers of limestone rock which effects considerable improvement when it comes up to the surface. This is not uncommon on the Lower Lias clay. An interesting area occurs at Crimscote, just off the road between Shipston-on-Stour and Stratford-on-Avon, where a considerable area has become derelict. The subsoil over the whole area is fairly uniform and is extraordinarily heavy, the heaviest I have yet come across, containing nearly 50 per cent. of clay and 20 per cent. of fine silt. On the south side of the road the surface soil is not much better, containing 41 per cent. of clay and 22 per cent. of fine silt; it was cultivated in the old days of cheap labour and local lime-burning, but for many years it has been left to itself, its high-backed ridges giving it a peculiarly forlorn aspect. On the north side of the road, however, there is an outcrop of limestone admixed with sand. This has become broken up giving rise to lumps of the size of pebbles, which help to keep the implements clean, while some of it has dissolved in the soil and flocculated the clay; the sand has still further improved the soil by lightening it. Here therefore the farm buildings were placed, and this portion has remained in arable cultivation.

The analyses of the soils are:—

SURFACE SOILS.

	Cultivated	Practically waste		Entirely waste
	North side	Derelict arable field	Derelict grass field	Wood on south
Fine gravel . .	0·5	0·4	0·3	—
Coarse sand . .	16·2	10·9	11·7	0·7
Fine sand . . .	5·3	6·2	4·9	2·0
Silt	7·6	11·1	6·9	6·4
Fine silt . . .	12·4	15·4	17·5	22·0
Clay	34·2	30·7	32·3	41·0

SUBSOILS.

Fine gravel . .	0·2			—
Coarse sand . .	1·9			0·7
Fine sand . . .	1·3			1·6
Silt	3·1			7·1
Fine silt . . .	13·8			19·2
Clay	47·5			48·5

Methods of reclamation.—Two methods of reclamation are possible :—

1. *Conversion into arable land.*—In the eastern part of England where the rainfall is less than 30 inches it is often possible to use the clay for arable purposes. In place of the plentiful hand labour of bygone days it is necessary to substitute steam tackle or tractors, and the subsoiler or deep cultivator must be periodically employed to break up the plough sole that tends to form. Lime is indispensable; no single manure gives anything like such striking results as this. Other manures, however, are necessary, especially basic slag, sulphate of ammonia, and where possible farmyard manure. Winter corn crops only are safe, winter oats, wheat and barley; spring oats usually fail, and even spring barley is not altogether safe. A rotation successfully adopted on some of the heavy London clays in Essex is :—

1. Wheat.
2. Beans.
3. Winter oats.
4. Roots, consisting of mangolds, kohl-rabi, marrow-stem kale, but not swedes.

Part of this break is also in clover, part also is bare fallow. The farm is worked as a dairy farm.

It would probably be an improvement to have more of the land coming into the rotation, devoting the extra land to a seeds mixture which could be left down for several years. In this way the soil would be enriched in nitrogenous organic matter and the heavy yield of hay would help the dairy stock considerably.

The extent to which such a system might be adopted depends on the rainfall and on the percentage of clay in the soil: the higher the rainfall the smaller the amount of clay that would be permissible. In my experience the limits beyond which arable cultivation becomes very difficult are the following :—

	In.	In.	In.
Rainfall	20	30	40
Highest permissible percentage of clay for arable cultivation	35	28	25

The permissible percentage of clay falls where much less than 8 per cent. of coarse sand is present. On the other hand matters become easier if a sufficient amount of lime or calcium carbonate is added; thus at Rothamsted under a rainfall of 30 inches two fields are equally near the limit so far as clay is concerned, but one contains calcium carbonate and can therefore be used for arable purposes, while the other cannot be so used as it contains insufficient carbonate. The analyses are :—

Effect of Calcium Carbonate on the texture of soils at Rothamsted.

	Arable soil, Barnfield	Too sticky, Geescroft
Fine gravel	2·4	1·8
Coarse sand	5·5	4·9
Fine sand	20·3	27·8
Silt	24·4	25·4
Fine Silt	12·7	10·6
Clay	22·0	19·0
Loss on ignition	4·7	5·1
Calcium carbonate	3·0	·16

Whatever rotation is adopted, it is advisable to aim at a periodical long rest in grass, which can be followed by a root crop where there is any fear that the "bents" would cause trouble in the corn or would harbour corn disease or pests.

2. *Utilisation as grassland.*—In most cases the labour and risk of cultivating clay land has proved beyond the farmer's resources, and the land has therefore been devoted to grass. There is much to be said for this course so long as the grass is properly tended; it becomes very wasteful, however, when the land is left without attention.

Unfortunately, the grass has often been neglected, and in consequence the improvement of the heavy clay grass land is one of the most promising undertakings in land improvement in this country. It involves two processes:—

(*a*) provision of drainage,

(*b*) a heavy dressing of basic slag, or apparently, in the north and west, of finely ground rock phosphate. Lime does not produce such striking effects on clay grass land as on clay arable land.

It is not necessary to discuss these in detail. The actual drainage becomes a simple matter where the mole plough can be used; but there is often more to be done. The watercourses commonly need straightening. A little stream running through a clay field and left without attention for a few years soon covers a good deal of ground. The banks fall in, loops and curves develop, the drains become blocked up, the furrows of the higher ground become very wet and develop masses of *Aira caespitosa* and water crowfoot, and the low ground becomes liable to flood. Before any permanent improvement is possible the watercourses must be cleared, straightened, and the banks kept up. Even this is not all: the clearing and straightening must extend above and below the farm. Obviously this is business for a large drainage board armed with compulsory powers, and not for individual farmers. When all this is done, the outfalls of the drains must be kept clear.

Even grass, however, becomes uncertain in soils containing too much clay. The limits, in my experience, are somewhat as follows :—

	In.	In.
Rainfall	30	40
Highest percentage of clay for fair grass land .	37	35

If the percentage of clay rises higher, the soil becomes so wet that drainage may cost more for efficient maintenance than the produce of the land is worth. Further, in dry weather the soil shrinks and cracks so much that the grass suffers considerably. The problem of managing this very heavy land has proved too heartbreaking even for the farmer, and it has therefore been left alone. Clay land allowed to run wild in England is soon covered with a dense growth of bushes, which in course of time becomes an impenetrable wood ; at Rothamsted this took about 30 years. Some budding woodlands of the sort can be seen on the Oxford clay in travelling on the Great Northern Railway between Biggleswade and Tempsford ; in the Weald of Kent ; and on the heavier part of the Clay-with-flints in Herts and Bucks. Some, however, may be the direct descendants of the primeval forest which was never cleared because it was too unprofitable.

Reclamation of this extreme type of land involves, therefore, two distinct processes :—

1. Clearing the wood and stubbing the roots.
2. Improving the soil.

Clearing the wood is no new operation in England : it was, indeed, the first thing our British and Saxon forefathers had to do when they became too numerous for the open Down land that had sufficed for the Neolithic tribes of prehistoric times, and it has continued almost up to our own times. An extensive clearance took place in the forest of Wychwood, about 10 miles west of Woodstock, in the middle of the last century ; the operation is fully described in this Journal, 1863, Vol. 24. Ten miles of road had to be made ; this cost altogether 6,985*l.* The trees were cut down, the roots grubbed, and seven farmhouses and buildings were put up ; the net cost, after allowing for sales, was 10,452*l.*, for which 2,843 acres of farmland was obtained. This was let at 5,104*l.* per annum—a gain of 3,291*l.* on the revenue previously derived from the forest. The process was therefore profitable, although in later years the returns fell off.

A later, but much less extensive, clearance (30 acres) was made by Miss Coats, of Brattles Grange, Brenchley, Kent, just before the War, at a cost of 14*l.* to 17*l.* per acre of land left ready for ploughing, without allowing for the value of the timber; it is described in *Country Life* for July 10, 1915, and in the *Estate Magazine* for January, 1916. Through the courtesy of Miss Coats, I was able to follow the changes in these soils resulting from the conversion from woodland into arable. It has been generally assumed that a woodland soil is naturally rich, but, in my experience, this is not the case. The following is the chemical analysis of Miss Coats' soils; the fields adjoined the wood, and were carefully selected to allow a strict comparison to be made :—

	Original Wood		Newly grubbed wood "Hazel Copse"		Old arable land "Longfield"
	Surface	Subsoil	Surface	Subsoil	Surface
Organic matter . .	5·86	3·73	4·47	3·07	4·56
Nitrogen . . .	0·108	0·069	0·094	0·048	0·135
Phosphoric acid (P_2O_5)—Total .	0·057	0·049	0·061	0·050	0·11
Available .	0·001	0·004	0·001	0·004	0·068
Potash (K_2O)— Total . . .	0·43	0·41	0·32	0·46	0·29
Available . .	0·039	0·039	0·040	0·027	0·026
Lime (CaO)—Total .	0·096	0·05	0·084	0·061	0·20
Carbonates as $CaCO_3$	0·01	0·01	0·01	0·01	0·01

The main interest of the analyses lies in comparing the woodland soil with the cultivated soil. We may assume that the subsoil represents with a considerable degree of approximation the original composition of the soil, and the surface soil shows what changes have been brought about as a result of the actions to which it has been subjected. The effect of the woodland in increasing the supply of the organic matter has not been very great; the subsoil shows that the original stock was over 3 per cent., the surface soil which has received leaves, twigs, &c., for an indefinite period of years, contains only 5·86 per cent. It is clear that decomposition is fairly rapid and that no great accumulation of organic matter takes place. The percentage of nitrogen leads to the same conclusion; in the subsoil it is 0·06, in the surface soil, after receiving all the accumulations of organic matter shed by generations of bushes and trees, it is only 0·10, much less than would have been found in grass land.

These figures do not indicate a reserve of fertility in the woodland to be drawn upon by the cultivator. On the contrary they show that the old arable land reclaimed generations ago is richer than the woodland in everything except potash : in other words, that the cultivators had to build up fertility after the soil was cleared. In the case of nitrogen this has apparently been done by clover and farmyard manure; phosphates have been added to such an extent that the arable soil is now enriched by the equivalent of four tons of 26 per cent. superphosphate or two tons of bonemeal per acre. Only in the case of potash is there any indication that the original supplies have been drawn upon.

The clearing paid in this case because the texture of the soil was good. No one, however, could grub a wood and erect buildings at a net outlay of *3l.* *13s.* *6d.* per acre as was done in 1860, nor could Miss Coats' experience now be repeated. Where the bushes have not grown up the land can of course be cleared.[1] But it is improbable that any individual would take the risk of clearing the wood-covered clay areas dotted about all over the country, and the best one can hope is that proper afforestation methods will be used.

The silty clays.—On the coal measures there are often found poor silty clays containing no excessive amount of clay, but large quantities of fine silt. These have proved particularly troublesome to work because lime, which improves clay for arable purposes, has little or no effect on fine silt. The only useful method of treating these soils is to lay them down in grass.

Stony Soils and Pebbles resting on Clay.

The possibility of reclaiming stony soils turns on the thickness of the layer and the nature of the earthy material. When much stone is present only two courses are open : the land may be afforested, or it may be converted into grassland by improving the natural sward if there is one, or by sowing Elliot's mixture. Often it is left as rough wood, as in the Mereworth district in the Medway Valley.

Where the layer of stone is thinner the possibilities of reclamation are much greater. The worst case is the mixture of stones and sand which, as already indicated, may prove hopeless. The best is the mixture of stones and loam which is usually in cultivation. Stones resting on clay present an interesting problem because they become embedded in the clay, forming a surface which was too hard for the older agriculturists to tackle; hence the soils were left alone, and when drainage was defective they became covered by accumulations of peat. Thus they became acid, and, to make matters worse, many of them are also seriously deficient in phosphates.

An example is found at Chartley Park, Staffs. (Upper Trias), where nine inches of peat has accumulated on an old hard

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[1] See *Country Life*, Aug. 30, 1919, for a description of some war-time Cambridge clearings.

Analyses of Chartley Park Soils.

	Surface soils (overlain on waste land by peat)					Subsoils	
	Waste land		Recently ploughed up	Adjoining cultivated land		Waste land	
	E. bank under 2 in. of peat	S.E. under 9 in. of peat	Under 10 in. of peat	Old arable	Recently broken	Under 3 in. of peat	Under 8 in. of peat
Laboratory numbers	3	6	8	1	2	3	
Fine gravel	2·0	0·6	0·5	1·3	1·3	0·7	0·2
Coarse sand	21·9	26·5	20·5	20·5	22·2	26·0	25·3
Fine sand	28·4	27·3	22·8	24·9	21·6	22·1	17·7
Silt	13·9	15·0	13·4	15·0	14·4	13·9	11·7
Fine silt	10·0	10·5	13·7	16·0	14·4	10·3	10·9
Clay	5·8	6·4	7·8	9·3	11·9	14·3	16·6
Organic matter	13·5	7·4	14·8	8·05	5·2	5·1	7·7
Nitrogen	0·33	0·13	0·33	0·24	0·09	0·07	0·17
Phosphoric acid (P_2O_5)—							
Total	0·060	0·038	0·086	0·080	0·050	0·025	0·032
Available	0·007	0·006	0·034	0·013	0·005	0·004	0·004
Potash (K_2O)—							
Total	0·23	0·20	0·31	0·56	0·62	0·46	0·50
Available	0·025	0·009	0·014	0·017	0·015	0·018	0·016
Carbonate as calcium carbonate	0·01	0·002	0·17	0·12	0·06	0·004	0·098

surface that must have appeared very unpromising to any early agriculturist who examined it. By the use of steam tackle it is possible to get underneath this layer of stones, and then a good yellow loam, or in places white clay, underlain by red loam is revealed, fully equal in texture to the surrounding cultivated land, but very deficient in lime. Analyses of the soils are given in the Table on page 131.

A similar area is found on the pebble beds of the Lower Trias, at Aylesbeare, near Exeter. The land is waste and is very stony, but when the pebbles are removed several inches of brown soil are found, underneath which is a reddish yellow clay with some pebbles. The steam cultivator would have no difficulty in getting through all this, and once the surface were broken up and provision made for drainage, good results could reasonably be expected. Some of the rather lighter part of the land has been taken into cultivation, but the remaining waste soil is by no means too heavy, and after adequate treatment with lime and phosphates could be brought into cultivation.

The higher ground, however, could not be so treated, owing to the greater thickness of the stone layer. Here the only possibility would be to improve the grass or to plant trees; there is a sufficient sprinkling of self-sown Scotch firs to show that this might be a suitable course.

The analyses of the Aylesbeare soils are as follows:—

	Waste land. Lower ground near Moor plantation and towards Manor Farm		Cultivated land behind Hill Cottage
	Surface	Subsoil	Surface
Laboratory numbers	21	20	22
Fine gravel	1·2	0·9	1·4
Coarse sand	16·3	11·8	34·6
Fine sand	21·7	12·0	19·4
Silt	19·3	12·2	9·2
Fine Silt	20·0	20·8	15·3
Clay	5·8	32·0	3·7
Organic matter	10·0	4·6	8·0
Nitrogen	0·33	0·09	0·25
Acidity	Present	Present	Nil
P_H value	5·1	5·3	6·7
Lime requirement	0·46	0·37	Nil
Potash (K_2O) sol. in hydrochloric acid	0·83	1·69	0·48
Phosphoric acid (P_2O_5) sol. in hydrochloric acid	0·04	0·04	0·05

Should this land be reclaimed, it is probable that large dressings (10 cwt. per acre) of finely-ground mineral phosphates would prove useful, both in counteracting acidity and in supplying the necessary phosphates. Adequate provision for drainage would be essential.

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THE LAND TAX.

OVERSHADOWED by a six-shilling income-tax, and in popular parlance confused with the "Land Taxes" imposed by the Finance (1909-10) Act, 1910, the subject of this article has lost some of the importance which formerly attached to it. In the years which now seem so long ago, when the income-tax was under or little over a shilling in the pound, the addition of a further charge, often at that rate on a higher assessment, was relatively of greater importance than it is to-day. Yet, in view of the incidence of this tax at its highest rate over large portions of the agricultural counties, the subject is not unworthy of consideration.

HISTORY.

The earlier history of this tax is thus succinctly stated in the "Encyclopædia of the Laws of England."

"The Land Tax was first imposed in 1689 (1 Will. & Mary, c. 3). It was developed from the fixed assessments imposed by the Commonwealth on the abolition of the subsidies and fifteenths which had been substituted for the feudal scutage. It was intended to be a tax on personal property, salaries and land, and in 1692 it was charged at four shillings in the pound on all real estate, assessed on the *bonâ fide* rack rent, and on offices (except naval and military offices), and at twenty-four shillings per 100*l.* on personal estate. It was originally, but inappropriately, described as an aid by a land tax, when it was more correctly a national assessment. In 1698 there was substituted a grant of a fixed sum, called an aid by a land tax, and the quotas to be collected from the different districts were specified. From 1698 to 1797 the tax was voted annually and the maximum pound rate to be levied was fixed. The tax has never been levied in Ireland, but was extended to Scotland at the Union."

The history of the tax in its present form dates from 1797 when the Act 38 Geo. III., c. 5 was passed, becoming operative in the next year. This Act, for raising a sum of 1,989,673*l.* 7*s.* 10¼*d.* from England and 47,954*l.* 1*s.* 2*d.* from Scotland, imposes definite quotas on each ancient borough and county. They are curiously odd sums, in many cases involving half-pence, while Hertford contributes the odd farthing. These provisions were stereotyped and made perpetual in 1798, and have not since been altered. Hence arise the extraordinary inequalities of this tax as between different parts of England. The growth of the manufacturing and mining districts had not then begun, and the northern counties, now so rich and populous, were then poor and sparsely inhabited. Thus the whole county of Lancaster is assessed at 20,989*l.* 14*s.* 6½*d.*, while Suffolk, including its boroughs, has to yield 73,505*l.* 14*s.* 4½*d.* Northumberland and Durham together have only to contribute under 25,000*l.*, while Wiltshire is charged over 50,000*l.* The town of Northampton is assessed 830*l.* 7*s.* 10*d.*, the town of Tenterden (Kent) 863*l.* 2*s.* These instances might be multiplied indefinitely, and it is evident that a tax thus stereotyped must inevitably become an anachronism.

The tax imposed by the Acts of 1797 and 1798 was intended to be a comprehensive one, similar to the income-tax of later years. Personal property and stock-in-trade (at four shillings in the pound on an annual value taken at 5 per cent. of its capital value) is first mentioned, then employments of profit, pensions, and annuities, and lastly lands, tenements and mines. It does not appear, however, that at any time a large amount was raised by the taxation of personal property, and in 1833 this was exempted from Land Tax. No limit was fixed by the Act of 1797 to the rate in the pound on lands, &c., but the Land Tax Redemption Act, 1802, provided that the tax on these should not exceed four shillings in the pound. This last-mentioned Act consolidated previous statutes relating to the tax, and made further provision for its redemption and sale. Then, as now, the national necessities were great and urgent, the long-continued European wars were draining to the utmost the resources of the State, and it was imperatively necessary to devise means for raising capital and reducing the National Debt. The redemption of the tax, now levied on a settled basis, was encouraged, and large sums of capital money were received by the National Exchequer from this source during the years 1798-1810. Tax amounting to about 750,000*l.* per annum was thus redeemed.

Under the provisions of "The Land Tax Perpetuation Act, 1798," the county quotas were divided into parochial quotas, and these again appear to have been based rather on ancient conditions than on then existing ability. These quotas remain unchanged to this day, except so far as they are affected by the operation of the Act of 1896 (see later). The areas on which they are levied are the ancient Land Tax parishes, which often differ materially from present-day parochial areas, and the boundaries of which are sometimes very ill-defined.

Thus, with all its inequalities, the tax continued almost without alteration by law for nearly a century. In the meanwhile the manufacturing and mining districts multiplied enormously their assessable values, until the small quotas levied upon them by the Act of 1798 became almost uncollectible by reason of their smallness: whereas on the impoverished agricultural districts and small market towns and ancient ports of the east and south the heavy quotas became a crushing burden. In some parishes the full original rate of four shillings in the pound on a full rateable value was again approximated. Depression in agriculture reduced rents and assessments to very low figures; but though the incidence of other outgoings was correspondingly reduced, the same amount of Land Tax had to be raised in each parish by an enhanced rate in the pound.

This state of things led to the incorporation of new provisions dealing with the Land Tax in the Finance Act of 1896. This Act reduced the limit of assessment from four shillings to one shilling in the pound, both on the parish and on the individual tax-payer, and gave new facilities for the redemption of the tax. Any portion of the parochial quota which could not be raised by the rate of one shilling in the pound on the Income Tax (Schedule A) assessment of the property liable to Land Tax was remitted, and any individual assessment exceeding that amount became illegal.

The total amount raised by this tax in the year 1918—19 was only about 650,000*l.*—mostly, however, from the agricultural districts. Redemption has proceeded somewhat rapidly during the past twenty years owing to the increased facilities given by the Act of 1896 and the extinction of the quotas in lightly-assessed areas under the provisions of section 32 of that Act.

INCIDENCE.

The properties chargeable with Land Tax are described as "All Messuages, Manors, Lands and Tenements, and also all Quarries, Mines of Coal, Tin and Lead, Copper, Mundic, Iron and other Mines, Iron Mills, Furnaces and other Iron Works, Salt Springs and Salt Works, all Alum Mines and Works, all Parks, Chases, Warrens, Woods, Underwoods, Coppices, and all Fishings, Tithes, Tolls, Annuities and all other yearly profits issuing out of any lands, and all Hereditaments of whatsoever nature or kind situate within the said parish or place and on the persons or corporations having or holding any of the taxable subjects in respect thereof." The Courts have held that the Land Tax never was a charge on land in the strict sense of the term, but was merely a tax upon owners calculated by reference to their personalty, the offices they held, or the land they occupied.

Land Tax is in the first instance payable by the tenant. In the absence of agreement the tenant is entitled to deduct the tax from his next payment of rent, but if he has agreed to pay "all rates and taxes" or "all outgoings" he must pay the tax himself. Where a right of deduction exists, the landlord is only bound in law to allow the tenant the tax on the net rent he actually receives (*i.e.* the rent less tithe rent-charge, &c.) at the rate in the pound levied in the parish, and the tenant must bear the residue himself. In paying fee farm rents of not less than ten shillings to the Crown or to purchasers or grantees from the Crown, a deduction may be made for Land Tax at the rate (still) of four shillings in the pound. Other fee farm rents and all quit and free rents exceeding 1*l.* are subject to a deduction for Land Tax at the pound rate charged in the parish; and owners of land who have redeemed the Land Tax may make these deductions notwithstanding. Annuities or other yearly payments secured on land are taxable, and the appropriate part of the tax on the land in security is deducted on payment of the charge, unless its terms or the agreement of the parties otherwise provide.

For the reason that the Land Tax was held to be a personal tax and not a tax on property, it is not allowed as a deduction in fixing the gross estimated rental for rating purposes, nor in determining the net annual value for the purpose of copyhold fines and enfranchisements.

EXEMPTIONS.

There are exemptions by statute of certain colleges and hospitals; of the lands of poor persons which are not of the full yearly value of 20*s.*; and of a large number of small ecclesiastical benefices of the value of less than 150*l.* a year. Land in the occupation of the Crown and its immediate servants for public purposes are exempt from Land Tax on general principles.

A further relief to Land Tax payers is granted by section 12 of the Finance Act, 1898, which enacts that where the income of the owner of land subject to Land Tax is less than 160*l.* a year he shall be entitled to total remission of the tax, and where his income is between 160*l.* and 400*l.* he shall be entitled to remission of half the tax. These limits remain, notwithstanding the alteration of the limit of exemption from Income Tax. These remissions are settled by the Inspector of Taxes in accordance with the payer's Income Tax return, and have relieved from payment a large number of small owners. They in no way affect the parochial quotas.

EARLY REDEMPTIONS.

The early redemptions previously mentioned are a frequent cause of error or overcharge at the present day, and it is often very hard to determine whether a particular property is redeemed or not. There were then no tithe or ordnance maps or rate books, and in most cases no care whatever seems to have been taken to record accurately the property redeemed. "A house and land occupied by John Baker," or similar entries stating neither areas, name, situation nor other means of identification are constantly met with. And although, as stated later, the law requires that the assessors shall every year show in their assessment the present owners and occupiers of the redeemed properties—and if such a property shall have been divided between two or more owners, shall show such division—this has often been very imperfectly done or entirely neglected. The Land Tax Office can give no further information as to identity than that contained in the certificate of redemption, and neither they nor the Local Commissioners' Clerks take any steps to record definitions which have been settled by appeal, agreement or otherwise. It has thus often happened that when a portion has been sold off a redeemed estate, that portion has again been charged; and if it has been added to property which is chargeable, the probability of its being assessed again are very great. Particularly is this the case with small holdings which have been incorporated with larger ones and the old boundaries removed, and in such cases it is often extremely difficult to show how much land is redeemed. If the taxpayer knows that his property was once part of a larger estate, and if on inspecting the assessment he finds that this estate is treated as redeemed, he will have strong *prima facie* ground for assuming that the portion he holds is also redeemed. He should, in such case, obtain a copy of the certificate of redemption and endeavour by evidence to make it clear what property is included and that his own was part of it. Old particulars of sale containing a statement that the property is redeemed, though not conclusive, are also strong evidence of the fact, and such should be carefully preserved. And if the person assessed holds deeds or abstract of title running sufficiently far back, he should ascertain from them the owner, and if possible, the occupier, at the date of redemption, and compare the names with the list of redemptions.

Certified copies of any certificates of redemption can be obtained on application to The Registrar of Land Tax, Land Tax Redemption Office, Somerset House, W.C. The County, Parish, number of contract or name of owner at date of redemption, or such other information as will enable the contract to be identified should be furnished. The fee, of which the applicant will be informed, is usually only a few shillings.

If proper lists of the redemptions in each parish are not found at the office of the Clerk to the Local Commissioners, application should at once be made to the Land Tax Redemption Office to furnish them; and for such no charge can be made to the applicant. Old Land Tax Assessments are often a valuable source of information as to redemptions, and such should in all cases be consulted. Recent redemptions are generally more accurately recorded and more easily identified. Often the Tithe map numbers are quoted, in later cases the Ordnance numbers, and when this is the case the identification is clear.

There exist also some curious forms of ancient redemptions arising out of provisions in the early Land Tax Acts for redemption by limited owners. Where an option was declared in the contract "to be considered as a purchaser" the property is continued in the assessment, and is entitled to relief under Section 34 of the Act of 1896, the annual sum originally redeemed being paid by the Exchequer to the representatives or assigns of the Redemptioner. There are other cases in which the latter are entitled to receive out of the property an annual rent charge equal to the amount of tax originally redeemed, and this rent charge cannot be reduced.

It is worth noting that in cases where properties with appurtenant Common Rights have been redeemed, and a subsequent enclosure has taken place, the lands allotted in lieu of the Common Rights have been held not to be chargeable.

ASSESSMENT.

"The provisions for assessing, collecting and redeeming Land Tax are contained in numerous Acts which are mainly repealed or obsolete, thus rendering any investigation of the existing law a work of trouble and uncertainty, even to members of the legal profession" (Bourdin, 4th edition). Although the ground has been somewhat cleared by recent legislation, this *dictum* remains in large measure true.

The Tax is an annual one, under the management of the Board of Inland Revenue. Under the Land Tax Acts, Local Commissioners are appointed for each Division, who appoint a clerk and assessors for each Land Tax parish. The assessment is made for the year beginning on the 25th March and ending on the next 24th March, and the tax is payable, with other taxes, on January 1. Each parish is separately charged with the quota fixed upon it in the year 1798. The assessors are directed to prepare the assessment by inserting therein a list of the properties exonerated, describing them, and placing opposite to the description the amount redeemed, and if any property has since redemption been subdivided, such division should be shown. They are then to levy the amount remaining to be raised by assessment by an equal pound rate on the annual values of the remaining properties. The whole of the property in the parish, whether exonerated or not, should be brought into the assessment and fully described. Those who have examined Land Tax assessments will know how seldom they are prepared in full accordance with the official instructions, and—except in cases where the Inspector of Taxes is concerned under the Act of 1896—how perfunctory the supervision of the assessments appears to be.

For many years after 1798 the old Land Tax Schedules of four shillings in the pound upon the then assessments (usually only a fraction of the true annual values) were copied annually without alteration, from which arose the once very prevalent idea that Land Tax was a fixed charge. In some cases these old assessments were used until late in the last century.

The Land Tax Acts do not fix any basis upon which the tax is to be levied, but merely direct that all properties liable are to be charged "with as much indifference and equality as is possible." In practice it was usual until 1896–7 to adopt the rateable value, but since that date, and in consequence of the provisions of the Act of 1896, the Income Tax (Schedule A) assessment has been usually adopted, and in parishes (*a*) where the quota amounts to more than would be raised by a rate of one shilling in the pound upon that assessment, and (*b*) where it amounts to less than would be produced by a rate of one penny in the pound on such assessment, that assessment *must* be adopted. The Income Tax assessment is defined by the Act, and is interpreted in the instructions to assessors to be "the gross annual value as determined by the Income Tax Commissioners less any deduction allowed by them in respect of Land Tax, drainage, and sums expended for sea walls, and rates on tithe rentcharges, but not in respect of the allowance for repairs (one-sixth or one-eighth) made under the provisions of the Finance Act, 1894." The non-allowance of this last named deduction appears unreasonable and not to be justified if it is indeed an "allowance for repairs." The ordinary practice was to assess on the net and not on the gross value, and this principle has in one case received the assent of the Courts. The effect of the present practice is to add yet another complication to assessments, so that on the same tax demand in respect of the same property, it is quite possible that Schedule A, Schedule B, House Duty, and Land Tax may each be on a different assessment, these all differing from the Poor Rate assessment, which again may differ from that for Sanitary Rates under the Public Health Acts.

The Schedule A assessment for the purpose of Land Tax on land or house property let at its full yearly value is ordinarily arrived at by deducting from the rent (*a*) the Land Tax itself, (*b*) tithe rentcharge, if any, paid by the owner, (*c*) rates, if payable by the owner out of rent, and (*d*) drainage rates and sums expended for the repair of sea walls. In the case of occupying owners, the Schedule A assessment is usually based on the gross Poor Rate assessment, which is arrived at on the assumption that tithe is already allowed for. Land Tax and drainage rates, if any, should be deducted. In the case of assessments of tithe rentcharge the rates (the amount actually paid) on the tithe and reasonable costs of collection are entitled to be deducted, Tithe owners should see that the tithe on their glebe is deducted from the rents, otherwise it may be assessed twice over. As a farm lying in more than one parish is usually assessed to Schedule A in one sum in the parish in which the homestead is situate, it is necessarv to see that for Land Tax purposes the assessment is properly split up between the different Land Tax parishes.

The fact that a property has never, or not for a very long period, been charged Land Tax is not legally a bar to its being charged if it is liable; neither does the fact that a property has been erroneously charged for many years render it liable if it is redeemed or exempt. The following paragraph now appears in the "Instructions to Assessors":—

"You are not to assess any lands or tenements which have hitherto been treated as exempt simply because you cannot find or identify the particulars thereof in any contract of redemption. The fact of no land tax having been assessed for a considerable number of years may reasonably be regarded as presumptive evidence that the property at one time formed part of an Estate in respect of which the owner had redeemed the tax or had otherwise been exonerated."

In parishes where the quota is less than would be raised by a rate of one penny in the pound on the Schedule A assessment of the properties liable to Land Tax, the Act of 1896 requires that the tax should be levied at that rate and the surplus applied to the redemption of the quota until it is extinguished.

OVERCHARGES AND REMEDIES.

An assessment on land not subject to Land Tax (*i.e.*, redeemed, or exempted by Statute) is illegal. No appeal is necessary, and any attempt to enforce payment by distress would render those taking part in it liable to an action for trespass. The same would appear to be the case if the property is clearly assessed at more than one shilling in the pound on the true Schedule A value: but in such a case it would be proper to tender the correct amount due.

In parishes where the unredeemed quota amounts to more than one shilling in the pound on the Schedule A value of the unredeemed properties liable to Land Tax, and a portion of the quota is remitted under Sec. 31 of the Act of 1896, the Land Tax payer's position and remedies are comparatively simple. He has only to see that his own property is assessed on its correct Schedule A value as described above. If his assessment appears to be too high upon the basis above indicated, he should communicate with the Inspector of Taxes for the District (whose address can be ascertained from the local collector), and if he satisfies the surveyor that he is too highly assessed, the surveyor will issue a certificate to the collector reducing the assessment, and the tax upon it. The payer has no concern with the assessments of other Land Tax payers in the parish.

In parishes where the whole quota has to be raised by assessment and there is no remission under the Act of 1896, the position of the Land Tax payer is much more difficult. In this case his only remedy is by appeal. Not only is it necessary for him to see that his own assessment is correct: he is also affected by the question whether his fellow tax-payers are also correctly assessed, and whether all property liable to tax has been included in the assessment. The task of proving error or overcharge is not easy for the individual tax-payer; he is confronted with all the difficulties relating to early redemptions which have already been described, and the archaic provisions of the Land Tax Acts render appeals difficult and unsatisfactory.

In the parishes we are now considering the basis of assessment need not necessarily be the Schedule A assessment. It may be the poor rate or any other equitable basis, the matter resting in the discretion of the assessors, who may, however, be called upon to justify their assessment. No appeal can be heard until the assessment has been signed and sealed by the Commissioners, and when once it has been sealed the Commissioners have no power of themselves to quash or amend it, however unequal it may be, or to bring in any property omitted, except upon the appeal of some person who proves himself overrated. It will not unfrequently be found that the Commissioners are by no means conversant with the law of Land Tax, and sometimes their clerk is unable to give them accurate guidance. In any important case involving many assessments, it will be found good policy to engage the assistance of some person having accurate and extensive knowledge of the parish concerned.

Briefly the procedure relating to appeals is as follows :—

When the duplicate assessment is delivered to the collectors the Commissioners must give them notice when and where appeals against assessments are to be heard, the time being at least thirty days from the date of the delivery of the duplicates to the collectors. The collectors within ten days after receipt of the duplicate must give notice of the time and place so appointed by writing fixed to the doors of the parish church or chapel of ease of every parish. Persons intending to appeal must give notice in writing to one or more of the assessors, who may, if they think proper, attend before the Commissioners to justify their assessment. Two Commissioners form a quorum, and Commissioners interested in the parish to which the appeal relates may not act. The decision of the Commissioners is final, and even if erroneous cannot be disturbed by the Courts. The Inspector of Taxes has no control over the Commissioners' decision, but where the assessment is based upon Schedule A every effort should be made to get this rectified in time through the Inspector of Taxes ; and where necessary every possible pressure should be brought to bear upon the assessors to induce them to prepare their assessments strictly in accordance with law. There appears to be no real remedy against neglect of duty by the assessors, who are in theory the servants of the payers, who are therefore themselves responsible if their officers are guilty of dereliction of duty.

If an occupying owner considers his tax assessment too high, it will be of little use appealing against his Schedule A or Land Tax assessment until he has appealed against and obtained a reduction of his Poor Rate assessment. Any reduction should be notified to the Inspector of Taxes with a request for the consequent reduction of his Schedule A assessment, and to the Land Tax assessors in parishes where the whole quota is leviable.

There is no statutory provision for repayment of Land Tax in any case—neither on proof of overcharge nor of being entitled to remission on the ground of income nor even if tax has been paid on redeemed land. In the latter case, however, if clearly proved, an *ex gratia* repayment has sometimes been made ; and (in parishes entitled to remission of quota under Section 31 of the Act of 1896) errors discovered while the tax is in course of collection will sometimes be adjusted by the Inspector even if the amount has been paid.

REDEMPTION.

Land Tax can be redeemed under Section 32 (1) of the Finance Act, 1896, by payment of thirty times the sum assessed upon the property by the assessment last made and signed; and the redemption money can either be paid down at once or by such instalments as the Commissioners may allow (unpaid instalments carrying interest at 3 per cent.) There are provisions by which redemptions can be effected by limited owners. Forms with full instructions can be obtained of the Clerk to the Local Commissioners, and if these forms are filled up by the applicant, no fee is payable. It is necessary, however, to take great care accurately to describe and define the lands to be redeemed; the numbers on the ordnance map should be stated (with the date of edition of map) and preferably a map or plan should be annexed (of which two copies are required). If the land is not separately contented on the Ordnance map, a plan with dimensions and abuttals should certainly be annexed.

Whenever land subject to the tax is to be built upon or is likely for any reason to increase in value, or is substantially under-assessed in the existing assessment, redemption is desirable, and in the first case practically imperative. All buildings and improvements on land subject to land tax are taxable. Cases may occur in which heavy drainage rates or sea defence expenses or other temporary causes have reduced the assessment to a low figure, and advantage may be taken of this to redeem at small cost.

Apart from the cases above mentioned there is small inducement to redeem, as the investment of money at about 3 per cent. offers in these days little attraction. It would seem that the thirty years' purchase might under present conditions be reduced to twenty or even less, with advantage both to the State and to the tax-payer.

The following extract from "The Laws of England" defines the effect of redemption:—

"The word 'lands' in a redemption contract must be considered as having its natural meaning including everything down to the centre of the earth, and the effect of the redemption is to relieve the lands and their natural production and profits from further tax, although at the time of redemption such profits may not have come into existence or be known to exist. So also when land tax on a Manor has been redeemed, if the waste is afterwards enclosed and brought into profitable occupation, such waste cannot be assessed for land tax nor does land tax attach to allotments made under an Inclosure Act in respect of lands which have been redeemed. If, however, there is in existence at the time of redemption a separate and distinct hereditament liable to be separately assessed, all the circumstances of the case existing at the time of redemption must be looked at in order to see whether the intention of the certificate was that the surface only should be redeemed, or the land and everything beneath it. If a new hereditament distinct from, and not a natural production of, the land is created subsequently to the redemption of the land, such new hereditament is subject to land tax."

CONCLUSION.

The Land Tax of 1797 was theoretically a National Income Tax based on ability to pay, but from the beginning it fell far short of this ideal and the time had not yet come for the successful application of such a tax. The principles of assessment even of real property had not then been formulated, still less those of personal property; and the fixation of the quotas in accordance with the standards of a remote past, whereby the lowest sums were assessed on parts of the country which have since become the richest and most prosperous, and the highest quota on agricultural districts now relatively very poor, destroyed from the beginning any prospect of equity in the charge. The effect of the extensive redemptions has been to add to its inequalities. The trading and manufacturing classes, on their accession to power in 1832 took prompt steps to relieve their stock-in-trade and personal property from liability both to this tax and to local rates, thus creating for themselves an immunity which long continued and in a measure still continues.

As it stands to-day the Land Tax can only be regarded as an inconvenient survival from the past. The Encyclopedia Britannica (11th Edition) says that this tax is "an ancient tax upon an old assessment which has long become obsolete, but it interests economists most of all by the illustration it furnishes of what may be called a 'rent charge tax,' a tax, that is, which has been so long in existence and so fixed in its basis that it has become in reality a charge upon the property and not a direct burden upon the persons who pay it, as the Income Tax is." Universal compulsory redemption being probably impracticable, it would seem that the most convenient course would be a further fixation by law of existing charges for Land Tax, by commuting them into fixed rentcharges or fee farm rents, not subject to variation, payable to the State, and redeemable by the purchase of 5 per cent. War Stock, 1929-47 sufficient to produce the same annual income. Such redemptions as might take place, though they would probably not be numerous, would result in the cancellation of National indebtedness, and the cumbrous and antiquated machinery of Commissioners, Clerks, Assessors, &c., might then be scrapped with (ultimately) substantial financial advantage. The rent-charges might be collected with the taxes as at present, and Inspectors of Taxes might be empowered to make necessary divisions of the charge in the event of the splitting up of a property liable. Opportunity might be given by a year or two's previous notice of the change for payers to take stock of their position, and obtain any necessary correction of their charges. The remission of the whole or half of the charge to persons of small income, though somewhat anomalous, would probably have to be continued, and would be settled by the Inspector of Taxes as at present.

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THE ARTIFICIAL SEASONING OF TIMBER IN ESTATE TIMBER YARDS.

THE large quantity of unseasoned timber on the market at the present time, and the demand that must exist on many private estates for seasoned wood for immediate requirements, points to the advisability of providing some simple and inexpensive installation for artificial seasoning.

The object of this article is to describe some timber drying plants suitable for use in an estate timber yard that will meet these desiderata.

Different descriptions of timber have distinct structures, and degrees of durability varying therewith. They all possess, however, an annular sapwood comparatively soft and perishable surrounding an indurated core of hardwood. The woody portion (xylem) of arborescent plants performs three important functions, viz.: To conduct water with gases and salts in solution from the roots to the cambium and leaves; to form a suitable stem which raises the foliage to a position in which it secures the required amount of air and light; to provide a reservoir in which is stored a supply of elaborated food substances. The object of seasoning timber is to dry up or expel the liquids and semi-liquids which constitute the immature portion of the wood and are contained in the interstices between the fibres, for if this supply of sappy matter is allowed to remain it will putrefy and cause rapid decay. This drying operation must be performed without softening the cement binding of fibrillæ or bundles of cellular tissue which form the solid or fully matured portion of the wood.

As is well known the above object can be effected, when time permits, by natural seasoning or exposure to currents of atmospheric air. When, however, time is an object some method of artificial seasoning has to be adopted, and with proper manipulation not only can a more thorough desiccation, without harmful change of organic structure, be thus accomplished, but furthermore it can be effected in less than a tithe of the time required for natural seasoning. The reason for this latter fact will be made clear when it is remembered that air in motion causes the evaporation of any watery particles with which it comes in contact, and that the higher the temperature of the air the more rapid will be the evaporation. For example, one cubic foot of air at 32° Fahr. is only capable of carrying off about two grains of water per minute, whilst one cubic foot of air at 160° Fahr. will remove about sixty grains per minute.

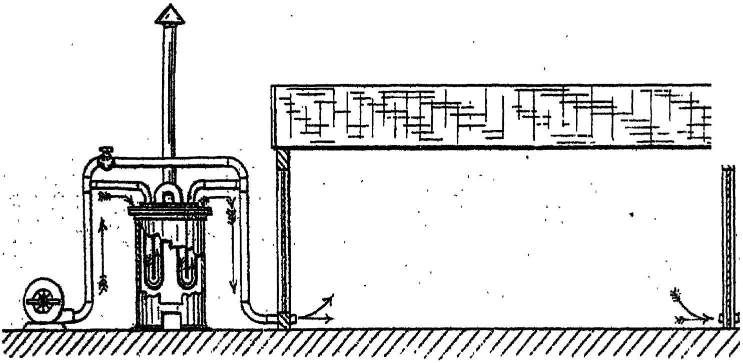

FIG. 1.

Artificial seasoning can be effected by an arrangement of steam pipes in the drying chamber, but this method, although giving fair results, is expensive and somewhat slow.

For small plants in estate yards the circulation of heated air by means of a fan is to be recommended as the preferable plan to adopt, and such a chamber or kiln is shown sectionally in Fig. 1. In this arrangement the air is driven through the heater by means of the fan, and enters the air-tight compartment or kiln at one end, circulates round and between the timber, escaping through the exhaust or ventilating pipe at the other end. Both the inlet for the heated air and the exhaust are situated near the bottom or floor of the chamber, and a bye-pass fitted with a stop-valve admits of regulating the temperature of the heated air.

The stove for heating the drying air is one that has been much used in the United States. A simpler and cheaper arrangement is to provide a fire-place or furnace beneath the drying chamber, and to allow the various gases produced by the combustion of fuel in the furnace to circulate freely between and around the timber to be seasoned. In M'Neile's process the atmosphere in the drying chamber is kept moist by providing therein a considerable surface of water to produce vapour.

In operation the temperature of the air should be gradually increased until the boiling point of water is reached. At this temperature it is impossible for water to remain in the wood, as that in the albumen or other substances is converted into steam, and passes away with the exhaust. Exposure to this degree of heat likewise coagulates the albumen, and thus fills the pores of the inner cells of the wood with a solid coagulum.

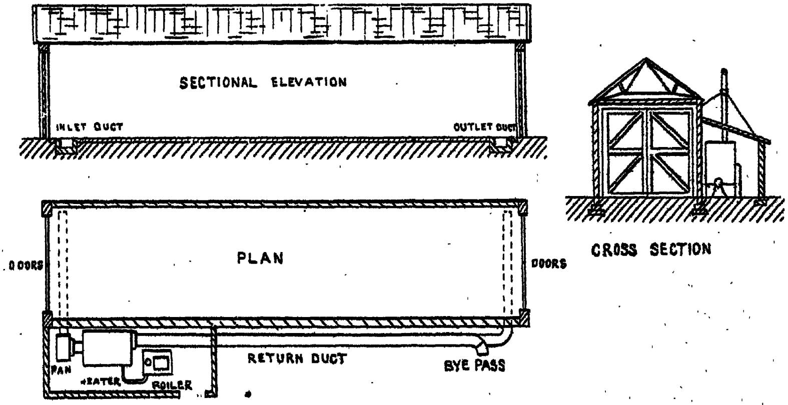

FIG. 2.

Another timber drying apparatus which might be employed for the purpose under consideration, and which is both simple and efficient, is that known as the "Sterling" made by Mr. G. F. Wells, Bath Street Ironworks, Sheffield. As will be seen from the illustrations (Fig. 2) which depict a drying chamber in plan, sectional elevation, and cross section, the arrangement comprises no complicated parts, can be easily worked by unskilled labour, and the cost of upkeep should be low. The apparatus for heating the air comprises a water heater, hot water battery, and a fan. The first of these consists of a specially constructed tubular boiler which can be fired by either coal, oil, or wood. As steam is not required the water consumption is practically nil, and only about one pint per week is required, consequently the same water can be used over and over again. For a temperature of 130° Fahr. at the fan outlet the total fuel consumption, when using coal of average quality, is said to be 20 lb. per hour, and the fan will deliver 2,000 cubic ft. of dry pure air per minute at the above average temperature which gives a temperature of from 100° to 110° Fahr. in the drying chamber. Any temperature, however, up to one of 250° Fahr. at the fan outlet can be obtained. To distribute the heated air equally over the drying chamber, or to concentrate same to any particular part, a simple arrangement of wooden baffles or ducts is provided.

In a system known as the S.K. process the drying medium employed is steam treated in a special gasificator wherein it is dried, heated to a high temperature, and transformed into a gas. This machine, which is made by the Steam King Coy. of Maldon, Essex, can be adapted for use with practically any existing kiln. The consumption of fuel necessary to heat the machine is given by the makers as being only 2 cwt. of coke, or an equivalent of other fuel, per day, and the consumption of steam is small, not exceeding half a kilo. per hour for every cubic metre capacity of the kiln or chamber. The kiln is maintained at a temperature varying from 120° to 130° Fahr. The efficiency of this system is said to be high. The process makes use of the latent heat of the dry or unsaturated gasified steam, coming into direct contact with the timber, for evaporating the moisture therefrom, and at the same time the latent heat of water comes into play. This arrangement might be used to advantage on estates where an existing boiler is available for the necessary supply of steam for the gasificator, which, as above mentioned, is small, and need not exceed 30 lb. per sq. in. pressure.

In estate timber yards where a plant for the open-tank hot or boiling creosoting process is in use the waste heat from the drying chamber or oven might be used for heating, or assisting in heating the creosote.

Desiccation by hot air is not advantageously applicable in the case of large logs owing to the expense of application being considerable, and also to the fact that the interior fibres are liable to retain their primary bulk whilst those nearer the surface shrink, with the result of surface cracks and splits. Large dimension timbers can be best seasoned by steaming or boiling.

Finally the operator should remember that, when hot air drying is used, the wood should not be dried insufficiently, or to excess, and that it is inadvisable to start with too high a temperature, as, if this be done, there will be a liability of the surface of the wood becoming slightly baked or dried, thus preventing the escape of the internal moisture. Wood dried to excess and fixed in a position where it is exposed to damp re-absorbs a considerable amount of moisture. Highly dried wood is only suitable for use where it will be subjected to a tolerably high temperature. A determination as to whether wood is sufficiently seasoned can be based on a moisture extraction from borings which should not exceed 20 per cent. in relation to the oven dry weight of the wood, or seasoning to a constant weight may be adopted.

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CONTEMPORARY AGRICULTURAL LAW.

I.—LEGISLATION.

THERE has been a considerable amount of legislation in the year 1919 bearing directly or indirectly on agricultural interests in this country which should be noticed. The Housing and Town Planning, &c., Act, 1919 (9 & 10 Geo. 5, c. 35), was passed with the object of speeding up the provision of houses for the working classes by local authorities. It is not necessary here to notice the provisions of this Act in detail, but attention should be drawn to Section 10 which gives a local authority, after an order has been made for the compulsory acquisition of any land, to enter and dispossess the owner or occupier of the land at any time after notice to treat has been served, on not less than fourteen days' notice to such owner or occupier, but subject to the payment of compensation. A similar power of taking possession is given as against a tenant from year to year or any less interest when the local authority have agreed to purchase or have determined to appropriate the land. It is obvious that under these provisions a tenant of agricultural land may be dispossessed of land in his occupation at very short notice.

The Animals (Anæsthetics) Act, 1919 (9 & 10 Geo. 5, c. 54), makes it an offence to subject a horse, dog, cat, or a bovine to any operation specified in the First, Second or Third Schedules to the Act unless the animal is under a general anæsthetic of sufficient power to prevent the animal feeling pain, or to any operation specified in the Fourth, Fifth or Sixth Schedules unless the animal is under the influence of some general anæsthetic, or some local anæsthetic, being in either case of sufficient power to prevent its feeling pain. The Board of Agriculture and Fisheries is empowered by order to be laid before Parliament to add any other operation to those specified in any Schedule to the Act, and may, by similar order, declare any substance to be a suitable general anæsthetic, or a suitable local anæsthetic for the purposes of the Act. The expression "horse" is defined as including "pony, mule, jennet or donkey," but the word "bovine" is not defined. The First Schedule relates to horses and includes, amongst others, the operation of stripping the wall or sole of the hoof, operations for poll evil and fistulous withers, ovariotomy and extraction of permanent molar teeth. The Third Schedule relates to bovines and includes ovariotomy and dishorning cattle over one month old. The Fourth Schedule relates to horses and includes, amongst others, neurectomy or unnerving, line and point firing, urethrotomy and docking of the tail. The Fifth Schedule relates to dogs and cats and includes docking of the tail and clipping or rounding the ears of animals over six months old. The Sixth Schedule relates to bovines and includes rumenotomy, urethrotomy and trephining.

The Acquisition of Land (Assessment of Compensation) Act, 1919 (9 & 10 Geo. 5, c. 57), amends the law as to the assessment of compensation in respect of land acquired compulsorily for public purposes. Where land is authorised under any statute (whether passed before or after the passing of this Act) to be acquired compulsorily by any Government Department or any local or public authority, any question of disputed compensation or any question as to the apportionment of rent payable under any lease is to be referred to the arbitration of one of a panel of official arbitrators to be selected in accordance with rules made by the Reference Committee which in England and Wales will consist of the Lord Chief Justice of England, the Master of the Rolls and the President of the Surveyors' Institution. The Act, by Section 2, lays down rules for the assessment of compensation which provide (*inter alia*) that no allowance shall be made on account of the acquisition being compulsory (Rule 1), that the value of land shall be the amount which the land, if sold in the open market by a willing seller, might be expected to realise (Rule 2), and that the special suitability or adaptability of the land for any purpose shall not be taken into account, if that purpose is a purpose to which it could be applied only in pursuance of statutory powers or for which there is no market apart from the special needs of a particular purchaser or the requirements of any Government Department or any local or public authority (Rule 3). It is provided, however, that the provisions of Rule 2 shall not affect the assessment of compensation for disturbance or any other matter not directly based on the value of land. Section 5 of the Act contains provisions as to the costs. Where the acquiring authority has made an unconditional offer in writing of any sum as compensation to any claimant and the sum awarded does not exceed the sum offered, the official arbitrator will, unless for special reasons he thinks proper not to do so, order the claimant to bear his own costs and pay the costs of the acquiring authority incurred after the offer was made. On the other hand, when the claimant has made an unconditional offer in writing to accept any sum as compensation and has given the required details of his claim and the sum awarded is equal to or exceeds that sum, the official arbitrator will, unless for special reasons he sees proper not to do so, order the acquiring authority to bear their own costs and to pay the costs of the claimant incurred after the order was made. By Section 6 the decision of an official arbitrator upon any question of fact will be final and binding on the parties, but he may state a special case for the opinion of the High Court upon any question of law arising.

The Forestry Act, 1919 (9 & 10 Geo. 5, c. 58), establishes a Forestry Commission for the purpose of promoting afforestation and the production and supply of timber in the United Kingdom. Eight commissioners are to be appointed to whom will be transferred the powers and duties of the Board of Agriculture and Fisheries, the Board of Agriculture for Scotland, and the Department of Agriculture and Technical Instruction for Ireland in relation to forestry. The Commissioners are empowered amongst other things to purchase or take on lease and hold any land suitable for afforestation and manage plant and otherwise utilise any land so acquired, to purchase or otherwise acquire standing timber, and sell or otherwise dispose of any timber belonging to them, and generally to promote the supply, sale, utilisation and conversion of timber, to make advances by way of grant or of loan to persons (including local authorities) in respect of the afforestation (including the re-planting) of land belonging to those persons, to undertake the management or supervision or give assistance or advice in relation to the planting or management of any woods or forests, and to promote and develop instruction and training in forestry by establishing or aiding schools, &c. By Section 4, where the Commissioners are satisfied that trees or tree plants are being or are likely to be damaged by rabbits, hares, or vermin owing to the failure of an occupier of land to destroy sufficiently the rabbits, hares, or vermin on the land in his occupation or otherwise taking steps for the prevention of such damage, the Commissioners may, after giving to the occupier and owner such opportunity of destroying the rabbits, hares, or vermin, or taking such steps as aforesaid as in the opinion of the Commissioners is reasonable, authorise in writing any competent person to enter on the land and kill and take the rabbits, hares, or vermin thereon and recover from the occupier summarily as a civil debt the net cost incurred by them in connection with the action so taken. The expression "vermin" in this section includes squirrels. By Section 7 the Commissioners are empowered to obtain from the Development Commissioners an order empowering them to acquire land compulsorily for the purpose of the Act, but land forming part of any park, demesne, garden, or pleasure ground, or forming part of the home farm attached to and usually occupied with a mansion house is excluded from compulsory acquisition.

The Land Settlement (Facilities) Act, 1919 (9 and 10 Geo. 5, c. 59) was passed to make further provision for the acquisition of land for the purposes of small holdings, reclamation and drainage, and to amend the enactments relating to small holdings and allotments and otherwise to facilitate land settlement. By Section 1 the requirements of the Small Holdings and Allotments Act, 1908, as to confirmation of orders for the compulsory acquisition of land for small holdings and allotments are suspended for three years, and may therefore be made and enforced by county, borough, and urban councils without any such confirmation. Section 2 of the Act gives a similar power of entry on land included in a compulsory order after not less than fourteen days' notice as is given to local authorities under the Housing, Town Planning, &c., Act, 1919, as before mentioned. By Section 3 the Board are themselves, if satisfied that in any county the council are not providing small holdings or land to be leased to a parish council for allotments, empowered during a period of three years from the passing of the Act to acquire land for small holdings or allotments. By Section 4 the Board may purchase land for reclamation or drainage, and they may also under Section 5 acquire land for small holding colonies compulsorily. The Act amends the Small Holdings and Allotments Act, 1908, in many particulars. By Section 9 it empowers councils to acquire land in consideration of a perpetual annuity. Section 10 makes the previous consent of the Board necessary to the acquisition of any land for small holdings before March 31, 1926. Under Section 11 land acquired by a county council must be sold or let by the council at the best price or sum that can be reasonably obtained and with a reservation of minerals. By Section 12 the powers of councils in relation to land acquired are extended. Section 16 amends Section 41 of the Small Holdings and Allotments Act, 1908, and notwithstanding anything therein contained authorises the compulsory acquisition of any land forming part of any park or any home farm usually occupied with a mansion house, if not required for the amenity or convenience of the mansion house, or a holding of 50 acres or less in extent or any part of such holding, but in any of these cases, except where a holding of 50 acres or less, or part of such holding, is required for purposes of allotments, the order authorising acquisition will not be valid unless confirmed or made by the Board of Agriculture and Fisheries. Moreover, any such holding of 50 acres or less is not to be acquired where it is shown to the satisfaction of the Board or the council, as the case may be, that it is the principal means of livelihood of the occupier thereof, except where the tenant is an occupier and consents to the acquisition. Section 17 empowers a county council to acquire land for letting to parish councils for allotments, and Section 18 empowers a county council to make or guarantee loans to any tenant or prospective tenant of a small holding provided by a council for the purchase of live stock, fruit trees, seeds, fertilisers and implements. Under Section 20 a county council may provide a holding of less than one acre if it is not less than half an acre and has a cottage thereon, and such a holding will be deemed to be a small holding for the purposes of the Act of 1908. Section 21 empowers borough, urban district and parish councils to purchase fruit trees, seeds, plants, fertilisers or implements for the purposes of allotments cultivated as gardens whether provided by the council or otherwise, and to sell any article so purchased to the cultivators, or in the case of implements to allow their use, at a price or charge sufficient to cover the cost of purchase. The same section imposes a penalty not exceeding *5l.* for damage to any crops growing on an allotment cultivated as a garden when a proper notice of this provision is conspicuously displayed on or near the allotment. Under Section 23 when land is let for the provision of allotments either to a council or to an association formed for the purpose of promoting the creation of allotments the right to claim compensation from the landlord on the determination of the tenancy is to be subject to the terms of the contract of tenancy notwithstanding the provision of any Act to the contrary. Part III. of the Act provides for recoupment to county councils by the Board of Agriculture and Fisheries of losses incurred by such councils in the exercise of their powers under the Act of 1908, and also for the recoupment of capital losses on the value of the interest of county councils in all land acquired by them under the Act of 1908 (other than land acquired by a council acting in default of a district or parish council and small holdings of less than one acre), and vested in them on April 1, 1926, to be ascertained by valuation. Section 28 contains provisions protecting commons and open spaces from appropriation or acquisition for small holdings or allotments except under an order for compulsory purchase confirmed by Parliament. Section 30, to remove doubts, declares that Section 1 of the Defence of the Realm (Acquisition of Land) Act, 1916, which enables a Government Department to continue in possession of land occupied by them for two years after the termination of the war, applies to land of which possession has been taken by the Board of Agriculture and Fisheries under the powers conferred by Regulations 2 L and 2 M of the Defence of the Realm Regulations, being the regulations under which so much has been done to increase food production by local authorities and County War Agricultural Executive Committees during the last few years.

The Agricultural Land Sales (Restriction of Notices to Quit) Act, 1919 (9 & 10 Geo. 5, c. 63), was passed to meet hard cases of agricultural tenants dispossessed of their land in consequence of the sales of land which have been so frequent of late. It enacts that in the making after the passing of the Act of any contract for sale of a holding or part of a holding any then current and unexpired notice to determine the tenancy of the holding given to the tenant either before or after the passing of the Act shall be null and void, unless the tenant after the passing of the Act and prior to the contract of sale agrees in writing that the notice shall be valid. The Act is confined to agricultural and market garden land, and does not apply to a contract for sale to a Government department or local authority for small holdings or allotments or other public purpose made within three years after the passing of the Act.

The Rats and Mice Destruction Act, 1919 (9 & 10 Geo. 5, c. 72), imposes a penalty not exceeding 5*l.* upon an occupier of land who, after service upon him of an order under the Act requiring such steps to be taken, fails to take such steps "as may from time to time be necessary and reasonably practicable" for the destruction of rats and mice on land in his occupation. The local authorities for the execution and enforcement of the Act are in any administrative county (other than the county of London) or county borough (except any part thereof which is a port sanitary district) the council of the county or borough. The Board of Agriculture and Fisheries are empowered in case of failure of a local authority to execute and enforce the provisions of the Act to name a person to enter upon the land and execute and enforce or procure the execution and enforcement thereof, and the expenses so incurred by or on behalf of the Board will be payable to the Board by the local authority. A local authority may by public notice give instructions as to the most effective methods that can be adopted both individually and collectively with a view to the destruction of rats and mice. When a local authority is of opinion that the occupier of any land in its district has failed to take such steps as required for the destruction of rats and mice they may either serve notice on him requiring him to take such steps as are prescribed in the notice within a time specified, or after not less than twenty-four hours' notice to the occupier enter upon the land and take such steps as are necessary and reasonably practicable for the purpose of destroying the rats and mice on the land, or of preventing the land from becoming infested with rats and mice, and may recover any reasonable expenses so incurred from the occupier of the land summarily as a civil debt. It is provided that the local authority in the exercise of their powers shall so far as possible take or secure collective action for the destruction of rats or mice. "Land" is defined as including any buildings and any other erection on land and any cellar, sewer, drain or culvert in or under land.

The Ministry of Agriculture and Fisheries Act, 1919 (9 & 10 Geo. 3, c. 91), authorises His Majesty to appoint a Minister of Agriculture and Fisheries, and enacts that after the date of the first appointment any reference in any Act or document to the Board of Agriculture and Fisheries or to the President of that Board shall be construed as a reference to the Minister or the Ministry of Agriculture and Fisheries as the context may require. Section 2 of the Act provides for the appointment of a Council of Agriculture for England, a Council of Agriculture for Wales, and an Agricultural Advisory Committee for England and Wales for the purpose of assisting the Board of Agriculture and Fisheries. Each Council of Agriculture is to meet twice a year for the purpose of discussing matters of public interest relating to agriculture or other rural industries, and such meetings are to be held in public. Section 7 enacts that the council of every county (other than the London County Council) shall, and the London County Council, and the council of any county borough may, establish an agricultural committee in accordance with a scheme made by the council and approved by the Board, and the committee may consist partly of persons not members of the council. All matters relating to the exercise by the council of their powers under the Destructive Insects and Pests Acts, 1877 and 1907, the Diseases of Animals Acts, 1894 to 1914, the Fertilisers and

Feeding Stuffs Act, 1906, the Land Drainage Act, 1918, and the Small Holdings and Allotments Act, 1908, and all other matters relating to agriculture, except such matters as under the Education Act, 1902, stand referred to the Education Committee, and except the raising of a rate or borrowing are to stand referred to the agricultural committee, and the council upon exercising their powers in relation to any matter so referred are, unless in their opinion the matter is urgent, to receive and consider the report of the agricultural committee with respect to the matter in question. Every scheme under this section is to provide (*a*) for the appointment by the council of at least a majority of the agricultural committee, and persons so appointed shall be persons who are members of the council unless the council otherwise determine, (*b*) for the appointment by the Board of not more than one-third of the members of the agricultural committee, and of any sub-committee to which powers of the agricultural committee are delegated, (*c*) for the inclusion of women as well as men among the members of the agricultural committee, (*d*) for the appointment in the case of the council of every county (other than the London County Council) of such persons only as have practical, commercial, technical, or scientific knowledge of agriculture or are interested in agricultural land. Any scheme under this section may provide for the payment as part of the expenses of the agricultural committee of travelling expenses and subsistence allowance of members of the committee and of any sub-committee of the committee. By Section 8 the Board may authorise an agricultural committee or a sub-committee thereof to exercise on behalf of the Board any of the powers of the Board under the provisions of Part IV. of the Corn Production Act, 1917, or Part II. of the Land Drainage Act, 1918. The agricultural committee must appoint a small holdings and allotments committee and a disease of animals sub-committee who will respectively act as the small holdings and allotments committees under the Small Holdings and Allotments Act, 1908, and as the executive committee under the Diseases of Animals Act, 1894. A county agricultural committee is to make such inquiries as appear to them to be desirable with a view to formulating schemes for the development of rural industries and social life in rural places, and for the co-ordination of action by local authorities by which such development may be effected. The first schedule to the Act provides for the composition of the Council of Agriculture for England, which is to consist of (*a*) two members of each agricultural committee established by a council of a county and one member of each agricultural committee established by a county borough to be nominated by the committee, but if the agricultural committees established by councils of county boroughs exceed twelve in number the total number of members nominated by those committees shall be twelve; (*b*) six members of the Agricultural Wages Board to be nominated by that Board, of whom three are to be representatives of workmen; (*c*) thirty-six persons nominated by the Board, of whom not less than eight shall be representative of workmen engaged in agriculture, not less than four owners of agricultural land, not less than four tenants of such land, not less than three women, not less than six representative of the industry of horticulture, and not less than three representative of agricultural education or research. The Council of Agriculture for Wales is also provided for, and is to consist of (*a*) two members of each agricultural committee established by a council of a county, and one member of each agricultural committee established by a county borough in Wales to be nominated by the committee; but if the agricultural committees established by councils of county boroughs exceed six in number the total number of members nominated by those committees shall be six; (*b*) five persons nominated by the governing body of the University of Wales; (*c*) two members of the Agricultural Wages Board to be nominated by that Board in equal numbers from the representatives of employers and workmen; (*d*) twelve persons nominated by the Board, of whom not less than five shall be representative of workmen engaged in agriculture, not less than two owners of agricultural land, not less than two tenants of such land, and not less than two women. The schedule also makes provision for the membership of the Agricultural Advisory Committee. Subject to the provisions of any regulations made under the Act the term of office of a member of a council or committee will be four years.

The Increase of Rent, &c. (Amendment) Act, 1919 (9 & 10 Geo. 5, c. 90), also requires notice. It will be remembered that the Increase of Rent and Mortgage Interest (War Restrictions) Act, 1915, prevents the recovery of possession of a dwelling-house when the annual standard rent does not exceed 26*l*. in any part of England, not in the metropolitan police district, so long as the rent is paid and conditions of the tenancy performed, except on the ground that the tenant has committed waste or has been guilty of conduct which is a nuisance or annoyance to adjoining or neighbouring occupiers, or that the premises are reasonably required by the landlord for the occupation of himself or some other person in his employ or in the employ of some tenant from him, or on some other ground which may be deemed satisfactory by the

Court making the order (see "Contemporary Agricultural Law" in R.A.S.E. Journal, 1916, vol. 77). The Increase of Rent and Mortgage Interest (Restrictions) Act, 1919 (9 Geo. 5, c. 7), besides other amendments of the Act of 1915, has prolonged its duration until Lady Day, 1921, and extended its operation to houses situated elsewhere than in the metropolitan police district and Scotland, where both the annual amount of the standard rent and the rateable value of the house or part of the house exceed 26*l.* and neither exceed 56*l.* The Increase of Rent, &c. (Amendment) Act, 1919, further restricts the power of recovery of possession of a house or cottage to which the Act applies by enacting that no order for ejectment shall be made so long as the tenant continues to pay rent at the agreed rate and performs the conditions of the tenancy, unless (*a*) the tenant has committed waste or has been guilty of conduct which is a nuisance or an annoyance to adjoining or neighbouring occupiers, and the Court considers it reasonable to make such an order, or (*b*) unless the tenant by sub-letting the dwelling-house or any part thereof or by taking in lodgers is making a profit which, having regard to the rent paid by the tenant, is unreasonable, and the Court considers it reasonable to make such an order, or (*c*) the premises are reasonably required by the landlord for the occupation of himself or some other person in his employ or in the employ of some tenant from him, and the Court after considering all the circumstances of the case, including especially the alternative accommodation available for the tenant, considers it reasonable to make such an order. The result, therefore, is that even when possession of a house or cottage to which the Act applies is required for the occupation of the owner himself or for a person in his or his tenant's employment the Court may refuse to make an order unless it is shown that the occupier to be dispossessed can obtain accommodation elsewhere.

II.—DECISIONS OF THE COURTS.

1. *Labour.* In *Baker* v. *Wood* (36 Times L.R., 71) it was held that where upon August 21, 1917 (when the Corn Production Act, 1917, came into operation) a farmer deducted 1*s.* a week from the wages of an agricultural labourer in respect of the occupation of a cottage, the provision in Section 1 (1) of the Increase of Rent and Mortgage Interest (War Restrictions) Act, 1915, that an increase of rent shall be irrecoverable does not prevent the farmer from deducting from the labourer's wages 3*s.* a week in respect of the benefit derived by the labourer from the occupation of the cottage under reg. 2 (5) of the Order made by the Agricultural Wages Board

by virtue of Section 12 (1) (b) of the Corn Production Act, 1917, inasmuch as the difference of 2*s.* is not deducted by way of rent but as representing a benefit given in lieu of cash.

There have been two cases on the question of the proper complainant in the case of an infraction by an employer of the obligation to pay the minimum rate of wages imposed by the Corn Production Act, 1917. In *Buchanan* v. *Osborne* ([1919] 2 Ir. R., 52) a workman employed in agriculture being paid a less rate of wages than that fixed under the Corn Production Act, 1917, Section 4, issued a summons against his employer for arrears, and the Justices dismissed the same without prejudice on the ground that the workman should under Section 7 have complained to the Agricultural Wages Board by whom the proceedings under the Act should have been brought. The King's Bench Division in Ireland held, reversing the Justices, that the workman was himself a proper complainant. In *Savill* v. *Harben* (17 L.G.R., 723; 83 J.P., 286) it was held that it is competent to the Agricultural Wages Board to institute proceedings in the name of their inspector against persons employing and paying wages to agricultural labourers at less than the minimum rate upon their own initiative, resultant upon an inquiry by the inspector of his own volition irrespective and in the absence of any personal complaint to the Board by the labourer himself that he has been paid less than the minimum wage. It is therefore apparent that proceedings for breach of the minimum wage provisions may be taken either by the workman himself or on behalf of the Wages Board.

2. *Stock.* In an Irish case of *McMorrow* v. *Layden* ([1919] 2 Ir.R., 398) the plaintiff was owner and occupier of the surface of certain lands on which there was an unfenced quarry, the mining rights in which were leased to the defendants' predecessor in title. These rights passed by will to the defendants, who paid the rent reserved by the lease but did not work the mine, and left it in the unfenced condition in which they found it. One of the plaintiff's bullocks fell into the quarry and was killed, and the plaintiff sued for damages for the loss. It was held that he was entitled to recover damages from the defendants, there being a continuing liability on the defendants to keep the quarry so as not to be a danger and a nuisance to their neighbours.

3. *Landlord and Tenant.* The case of *Re O'Conor and Whitlaw's Arbitration* (88 L.J.K.B., 1242) is an important case dealing with the duties of an arbitrator under the Agricultural Holdings Act, 1908. At the termination of the tenancy of two farms an arbitrator was appointed under that Act for the purpose of determining the compensation payable

to the outgoing tenant for improvements and of determining all other claims brought forward under Section 6 Subsection 3 of the Act or by agreement between the parties. By subsequent notices a number of such other claims were submitted to the arbitrator, including claims by the tenant in respect of (1) hay and straw left on the farms, and (2) fixtures; and a claim by the landlords relating, amongst other things, to the removal by the tenant of hay and straw after the termination of the tenancy. After two sittings by the arbitrator these claims remained the only matters to be further considered. On March 27, 1918, the arbitrator gave notice that he had been waiting to be supplied with information as to the hay and straw sold off, and warned the parties that if it was not supplied promptly he would have to hold another sitting. On April 8 he gave notice that he would go to the farms on April 12 "to value the hay and straw and to receive an account of the hay and straw removed." The tenant, having no such account ready, did not attend or send his representative, as he thought the only question to be dealt with was a valuation of the stacks of hay and straw remaining on the farm; but the tenant's foreman attended to point out and give information as to these stacks. While there the arbitrator, besides valuing the stacks remaining on the farms, questioned the foreman as to the hay and straw removed. Immediately afterwards he closed the hearing and proceeded to make an award in which he dealt with the claim for hay and straw removed on the basis of the foreman's evidence which had not been tendered by either party and was taken in the presence only of the landlord's representative. In his award he did not deal with the question of the fixtures but purported to reserve power to deal with them if either party called upon him to decide this matter. The tenant applied to set the award aside. The Court of Appeal (reversing the decision of the Divisional Court and restoring that of the County Court Judge) held that the award must be set aside, as the arbitrator had been guilty of legal misconduct (1) in taking evidence in the absence of and without previous notice to the tenant, and (2) in making an award not dealing with the fixtures, a claim for which was submitted to him for arbitration under the Act.

In *Whitehall Court, Ltd.*, v. *Ettlinger* (36 Times L.R., 80) it was held that when the Government in pursuance of the Defence of the Realm Acts and by virtue of the Royal Prerogative compel a lessee of premises to give up possession of them for an indeterminate time the liability of the lessee to pay rent to the lessor under the lease is not thereby suspended.

Croft v. *Blay* (88 L.J.Ch., 545; [1919] 2 Ch., 343) settled a very doubtful point on the date of determination of the tenancy from year to year of a tenant who holds over and continues in possession after the expiration of a lease and pays rent. It was held that in such a case the tenancy from year to year which the law implies from the holding over and payment of rent is determinable on the anniversary of the determination and not of the commencement of the original term. Hence notice to quit must be given for the anniversary of the determination of the term.

4. *Produce.* In *M'Ellistrim* v. *Ballymacelligott Co-operative Agricultural and Dairy Society* (88 L.J.P.C., 59 ; [1919] A.C., 543) the rules of the defendant society provided that members should sell their milk to the society under a penalty, that a member could not withdraw from the society unless his shares were transferred or cancelled, that the consent of the committee should be necessary for any transfer of shares, and that the committee should not be bound to assign any reason for refusing such consent. It was held that these rules were illegal and against public policy in that they created an unreasonable restraint of trade, for under them the members might be bound for life to deal only with the society.

Cases dealing with sales of milk were numerous in 1919. In *Knowles* v. *Scott* ([1918] S.C. (J.), 32) the defendant was charged with selling milk not genuine in respect of its being deficient in milk fat. It was proved that the milk contained less than 3 per cent. milk fat, but had not been tampered with in any way, the deficiency being due to the milk having stood for some hours in a can and to the sample having been drawn from the bottom after the cream had risen. It was held that while the failure to restore milk to its original condition by redistribution of the milk fat might in some circumstances constitute an "abstraction of milk fat" within the meaning of the Sale of Milk Regulations, 1901, the offence charged had not been proved in this case, there being no finding to the effect that there was some well-known method of distribution which the defendant had failed to adopt.

In *Whittaker* v. *Forshaw* (88 L.J.K.B., 989; [1919] 2 K.B., 419) John Forshaw, a farmer, was prosecuted for selling milk to the prejudice of the purchaser, it being found on analysis to have 24 per cent. of added water. He had for several years supplied certain customers regularly with milk, and he gave his daughter, a girl of about thirteen years, general instructions to take the milk as it was set aside and deliver it at the customers' houses. On October 16, 1918, two cans of milk were set apart, one for Mr. Hughes and one for Miss Butler, and the girl took it in order to deliver to those customers. On the way an inspector of police required her to sell him some of the milk which she purported to do. This milk was analysed and found to be adulterated. It was held that the Justices had rightly refused to convict the farmer, as there had been no valid sale by him to the inspector, for his daughter had no authority to sell the milk but only to deliver it to the customers.

In *Jenkins* v. *Naden* (88 L.J.K.B., 1137) in a similar prosecution the certificate of an analysis as follows:—"I am of opinion that the said sample contained the parts as under, namely, 2·5 per cent. of fat. Compared with the limit of the Board of Agriculture it was deficient in fat to the extent of 16·67 per cent." was held admissible in evidence, although it did not set out the constituent parts of the sample analysed.

In *Smith* v. *Philpott* (17 L.G.R., 781) a second sample taken from the same cow three days after the alleged offence to show the alleged deficiency in fat could not have resulted from natural causes was held to be admissible in evidence.

In *Elder* v. *Kelly* (88 L.J.K.B., 1253; [1919] 2 K.B., 179) it was held that when a milk-seller sold milk on a Sunday during prohibited hours the fact that the sale is illegal and void by virtue of the Sunday Observance Act, 1877, is no answer to a prosecution under Section 6 of the Food and Drugs Act, 1875, if the milk sold is adulterated.

Buckingham v. *Duck* (88 L.J.K.B., 375) was a case under the Milk (Prices) Order, 1917, where a milk-seller was held rightly convicted for selling milk in excess of the maximum price, although the sale was the act of a servant employed to supply customers with milk and was against the appellant's express instructions who had warned the servant against giving short measure which would result in his obtaining more than the maximum price.

Ollett v. *Henry* (88 L.J.K.B., 998; [1919] 2 K.B., 88) was a case of unsound meat. An information was preferred against the secretary of a company for having in his possession on the premises of the company at Eastbourne meat deposited for sale and intended for the food of man which was unfit for human food. The meat was part of a consignment sent to the company from Smithfield Market. The company had nothing to do with sending this meat, and it had simply been sent to them for distribution amongst the local butchers accordingly as it should be allocated by the local official agent of the Ministry of Food. The company had to act under the directions of that agent and were not responsible for his acts, as he had complete control. The meat never became the property of the company, but they collected the purchase money from the butchers and paid it to the Ministry of Food without deduction, and a fixed commission of 2½ per cent. was paid by the Ministry. It was held that the meat had been deposited "for the purpose of sale" within the meaning of Sections 116 and 117 of the Public Health Act, 1875, as extended by Section 28 of the Public Health Acts Amendment Act, 1890, and that consequently the secretary should be convicted of the offence.

Warburton v. *Stamp* (88 L.J.K.B., 1170) was a case of a prosecution for the sale by retail of a wild rabbit at a price exceeding the maximum under the Wild Rabbits (Prices) Order, 1918. The appellant's agent visited the respondent's shop and bought a rabbit. The respondent's assistant weighed the rabbit in its skin in the purchaser's presence and then proceeded to skin it, the purchaser making no objection. The respondent charged the purchaser a sum equal to the maximum price for the rabbit if the skin was included in the sale. The assistant, after skinning the rabbit and throwing the skin on a pile of rabbit skins, wrapped up the skinned rabbit, and without asking the purchaser if he wanted the skin, gave the rabbit without the skin to the purchaser, who took it and left the shop. The magistrates were of opinion that the property in the unskinned rabbit passed to the purchaser on its being weighed, and they therefore held that the skin was included in the sale, and dismissed the information. It was held by the Divisional Court that the question whether there was a sale of the whole of the rabbit, including the skin, was a question of fact for the magistrates, and consequently that they were entitled to refuse to convict.

In *Williams* v. *Brazier* (83 J.P., 252) the Court held that the words "cockerel, pullet, cock or hen," in the Poultry and Game (Prices) Order, 1918, include a capon.

5. *Miscellaneous.*—In *Mansell* v. *Webb* (88 L.J.K.B., 323) a steam locomotive engine passing along a highway set fire to a plantation by the emission of sparks. The engine had a special apparatus to prevent the emission of sparks, but it was held that the owner of the engine, as he was using a thing of a dangerous nature, although in no way negligent, was liable in damages for the injury caused to the plantation.

Dobson v. *Jennings* (17 L.G.R., 769) was a case in which a question arose as to the necessity of a licence for an agricultural locomotive. The appellant was a Wiltshire farmer who bought a locomotive in Bristol for use as an agricultural locomotive which had not previously been used for agricultural but for haulage purposes. His intention was to alter and adapt it for agricultural purposes alone. He drove the locomotive from Bristol to his farm, and was summoned for and convicted of unlawfully using on the highway a locomotive which had not been licensed by the county council. The Locomotives Act, 1898, by Section 9 Sub-section 1 excepts from licence any agricultural locomotive and any locomotive not used for haulage purposes. It was held on appeal that the conviction was wrong. The locomotive did not require to be licensed, as it fell within the above exceptions. Otherwise a farmer who bought a locomotive which was intended to be used solely for agricultural purposes after the necessary alterations had been made would be obliged to take out a 10*l.* licence before he could take it along the highway in order to get it to his farm.

In *Lees* v. *Stone* (88 L.J.K.B., 1159) the appellant in the course of a shoot took up his stand for a short time upon a highway and fired five cartridges from an ordinary sporting gun at birds driven over him. At that time no passenger or member of the public was passing on the highway, the only other person there being a constable stationed on the highway at the appellant's request to see that no interruption was caused by the firing to persons travelling on the highway. It was held that there was no evidence to support a conviction of the appellant of wantonly firing off a gun within fifty feet of the centre of a highway "to the injury, interruption, or personal danger of any person travelling thereon" within the meaning of Section 72 of the Highway Act, 1835.

In *Rex* v. *Marshland Smeeth and Fen Commissioners* (17 L.G.R., 679; 83 J.P., 253) the Drainage Commissioners for the Marshland Smeeth and Fen District in West Norfolk were held to be under a statutory obligation to drain their district effectually though not bound to provide for events of a wholly extraordinary character. An owner of land in the district who complained that his farm had suffered damage from ordinary floods owing to the failure of the commissioners to carry out their drainage duties under the Act by which they were constituted was accordingly held to have a right to apply for a writ of mandamus calling upon the commissioners to drain his farm effectually and to recover damages for their previous default.

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THE WORK OF THE AGRICULTURAL WAGES BOARD IN 1919.

A PREVIOUS note on this subject in the *Journal* (Vol. 79, pp. 138-146) was the subject of some criticism in the official journal of the Agricultural Wages Board—the *Wages Board Gazette*. It was stated that "it is a little unfortunate that the full list of hours and wages given in the *Journal of the Royal*

Agricultural Society has been obsolete since May of this year" (*Wages Board Gazette*, Vol. I, No. 26, p 337); and it was generally suggested that my previous note did not indicate clearly the period dealt with. There was no real ground for criticism on the date to which the statistical statements referred, for this is clearly printed at the beginning of the Tables. These were included to provide a convenient record of rates of wages as they existed in the Spring of 1919, when it was possible, practically for the first time, to make a complete statement of the results of the proceedings of the Agricultural Wages Board. The date given to the statements is the first of March. The general history of the Board during the year March to March, 1918-19, was also reviewed. It now appears to be advisable to limit the review to the calendar year, so that this note refers to the last ten months of 1919.

In a Command Paper prepared by the Agricultural Wages Board in the early part of 1919 it was estimated that the rates of cash wages had risen about 90 per cent. between early part of 1914 and the end of 1918, and that the average rates of wages current at the later period were: Ordinary labourers, 31*s.* 5*d.*; stockmen, &c., 38*s.* 1*d.*; and for all classes 33*s.*[1] These average rates were ruling also at the beginning of the period under review.

In January, 1919, the workers' side of the Board proposed that the rates of wages then in force should be increased by 1*l.* per week. The proposal was deferred, but it came up for serious consideration in March. The employers' side then offered an increase of five shillings per week for all male workers over 21 years of age, for the same number of hours as specified in the orders establishing the minimum rates then in force in the Districts. The question of customary hours was then under the serious consideration of the Board, and the general question of the hours of labour was exciting attention amongst the agricultural community. The offer of the employers was not satisfactory to the workers, and it appeared that a deadlock would arise. It was then decided that the President of the Board of Agriculture be asked to receive a deputation from the Agricultural Wages Board, and that the Prime Minister, or some member of the Government representing him, be asked to attend. This deputation was received by the President on March 18, but he pointed out that he had no power to adjudicate, and suggested that the Wages Board should make another attempt to arrive at a settlement. It was finally agreed to vary the minimum and overtime rates then in force so as to provide for a reduction in hours for the week on which rates were based and for a general increase of 6*s.* 6*d.* per week for all ordinary male workers over 21 years of age.

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[1] Report on the Financial Results of the Occupation of Land. Cd. 76, 1919, pp. 23-4.

The settlement was a somewhat complicated one, so the exact provisions are set out below.

(1) To vary the minimum and overtime rates at present in force for ordinary male labourers of 18 and over so as to provide:

(*a*) for a reduction of the hours for which the minimum rate is payable to 54 in summer and 48 in winter or to 52 hours all the year round, where such hours are at present in excess of those hours;

(*b*) for an addition to the weekly wages at present payable in respect of 52 hours a week all the year round, of the following amounts, that is to say:

For workers of 18 and under 19 years of age	3*s.*
,, ,, ,, 19 ,, ,, 20 ,, ,, ,,	4*s.*
,, ,, ,, 20 ,, ,, 21 ,, ,, ,,	5*s.*
,, ,, ,, 21 years of age and over .	6*s.* 6*d.*

(*c*) for an adjustment of the overtime rates to a basis of time and a quarter on weekdays and time and a half on Sundays, calculated on the revised minimum rates arrived at under the provisions of paragraph (*b*) above, and in relation to the summer hours.

(2) To vary the minimum and overtime rates at present in force in various areas for special classes of male workers of 18 years and over:

(*a*) by the addition to the rates for ordinary labourers of the respective ages arrived at under the provisions of paragraph (1) (*b*) above, of the sums which represent the differences at present existing between the rates for ordinary labourers and for the special classes of workers of the respective ages in the various areas;

(*b*) by the application to the special classes of workers of the overtime rates arrived at under the provisions of paragraph (1) (*c*) above, in lieu of the overtime rates at present applicable.

Provided that the amounts as arrived at above shall be adjusted to multiples of sixpence in the case of the weekly wages and to multiples of a halfpenny in the case of the overtime rates.

The effect of these resolutions is simple only in those counties in which the average hours per week over the whole year were 52. In Nottinghamshire, for instance, the existing rate was 35*s.* per week for all classes, the hours being 60 in summer and 54 in winter, with an average of 58. The new rate was 34*s.* 6*d.* at 18–19 years and 38*s.* at 21 years or over.

This is arrived at on provisions by the following method :—Age, 18–19 years : 35 (shillings) ÷ 58 (hours) × 52 (hours)= 31*s.* 4*d.* + 3*s.* (which taken to the nearest sixpence is 34*s.* 6*d.*) Age, 21 years and over : 35 ÷ 58 × 52 + 6*s.* 6*d.* = 37*s.* 10*d.* (which taken to the nearest sixpence is 38*s.*). The effect of the new rates in this county was to reduce the rate for workers aged 18–19 years, and to increase the rate for those over 21 years by 3*s.* per week. But *earnings* would be increased if the same hours as formerly were worked because of the extra time reckoned as overtime and because of the increased overtime rate.

When the new order was made in May, "customary hours" for the special classes were provided for in fourteen of the forty "Districts." The variations from the 54–48 hour week are given below :—

VARIATIONS FROM 54—48 HOUR WEEKLY BASIS IN THE ORDER OF THE 19TH MAY, 1919.

District	Classes	Hours Summer	 Winter
Carnarvon	Horsemen, cowmen, shepherds, bailiffs	61	61
Berks.	Carters, cowmen, shepherds	Customary	
Cambridge, Isle of Ely, Huntingdon, Bedford	Horsekeepers, cowmen, shepherds	"	
Cumberland, Westmorland, North Lancashire	Horsemen, cattlemen, shepherds	"	
Denbigh, Flint... ...	Teamsmen, cattlemen, shepherds, bailiffs	61	58
Derby	Stockmen, horsemen, shepherds	Customary not exceeding 63	Customary not exceeding 65
Dorset	Carters, cowmen, shepherds	Customary	
Gloucester	Stockmen, horsemen, shepherds	"	
Hampshire, Isle of Wight	Carters, dairymen, cowmen, shepherds	"	
Lincolnshire	Stockmen, teamsmen, shepherds	"	
Merioneth, Montgomery	Stockmen, teamsters, carters, shepherds	"	
Norfolk	Teamsmen, shepherds, cowmen	"	
Northumberland, Durham	Shepherds, horsemen, cattlemen	"	
Oxfordshire	All classes	52	52
Suffolk	Horsemen, stockmen, shepherds	Customary	
Warwick...	Stockmen, shepherds, horsemen	"	
Yorkshire	Horsemen, cowmen, shepherds	"	

In all other cases the week on which the wage was reckoned was 54 hours in summer and 48 in winter, averaging 52 hours per week over the year. This was the average also in Oxfordshire. In twenty-two districts no distinction was made between the special classes and other workers.

In several Districts there was a considerable reduction in the number of hours on which the wage was based, but there is very little information on the effect of the new provisions on the actual time worked. As a result, it is difficult to estimate the effect of the order on the earnings of the workers; but it may be said that the most general effect was to increase earnings, by the addition to the weekly rate, by increased overtime and increased overtime rate, by rather more than the 6*s.* 6*d.* which was added to the previous rates.

At this time notification was given that the Board intended to propose that the week on which the wages were based should be reduced to 50 hours in summer and 48 in winter as from the first Monday in October.

While the proposed new rates were under consideration there was much public interest in the Royal Commission on the Coal Industry, and the workers' representatives on the Board suggested that they would ask for the appointment of a Royal Commission on Agriculture. This suggestion was welcomed by some agriculturists, and pressed by the Agricultural Committee of the House of Commons, with the result that the late ill-fated Royal Commission was appointed in July.

The advertisement of the proposed new rates of wages aroused something like a storm in the counties. A conference of the Agricultural Wages Board and representatives of the District Committees was held on May 7. About 250 representatives of District Committees attended, and many grievances were aired. But it was evident that the District Committees had no common views, and no resolutions regarding the relations of the Board and the Committees were passed. Indeed, the only definite result of the conference at the time appeared to be the passing of a resolution to be forwarded to the War Office! There can be no doubt, however, that the conference had a beneficial effect on the relations of the Board and the Committees, and that it has facilitated their common work.

On March 3 the "Half Holiday" Order came into force, and is printed for record in the Appendix[1] to this note. It will be noticed that this order made special provision for the cases of stockmen and others spending time on the cleaning and feeding of stock. This provision was repealed or altered in regard to several districts during the summer, and was generally repealed by the order dealing with hours of work and rates of wages issued in October. Also, special provisions have been made for the application of the "Half Holiday" Order to cases in which there are agreements between employer and employee entitling the employee to certain regular holidays in the course of the year, in certain districts.

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[1] Appendix IV.

During June and July, changes were made in the valuations of benefits and advantages in various districts. Special harvest rates for some 16 districts were also fixed. The principles on which these rates were fixed show considerable variation, but the most general principles were those of a special rate per hour, or a special overtime rate, or a combination of the two. In several cases the adjustment of special payments for harvests was left for mutual agreement between employers and employees in the locality. And it may be noted here that in some areas organisations of employers and employees made mutual agreements as to special harvest rates.

In July, the minimum rates of wages for female workers were increased. The prevailing rate over the whole of England and Wales (except the northern counties) was *5d.* per hour, with *6d.* per hour for overtime on week days, and *7½d.* on Sundays. The new rates were *6d.*, *7½d.*, and *9d.* per hour respectively over the greater part of England and Wales. In certain of the northern counties the new rates were: Ordinary time, *7d.*; overtime, *9d.*; and Sunday overtime, *10½d.* per hour.

During the summer, changes were made in some of the District rates for boys, and also for male workers over 18 years of age, but the most important change occurred with the publication of the "50 Hours" Order in October. This order was the result of an agreement entered into by the representatives of employers and workers during the consideration of the proposal for a general increase in rates in March. The publication of the proposal caused some excitement amongst the farming community. This was the cause of the first intervention of the President of the Board of Agriculture in the proceedings of the Wages Board under the provision of Section 5 (5) of the Corn Production Act. A letter was addressed to the Agricultural Wages Board by the President of the Board of Agriculture asking them to reconsider their proposal, in view of its prospective effects on the industry, especially the effect on production which was anticipated. A special meeting of the Agricultural Wages Board was called, and a reply to the President's letter was dispatched. This recalled the agreement made in March, and stated that neither employers nor workers felt that they could break the agreement then reached. It was also stated that the matter was really one of wages and not of hours, and that the responsibility for any reduction in hours actually worked rested with the employers and workers throughout the country and not with the Agricultural Wages Board or their orders.

The general order which came into force on October 6 dealt with every District except Cheshire. The hours under this order are 50 in Summer and 48 in Winter, averaging 49⅓ hours per week throughout the year, with the following exceptions:

District	Classes	Hours	
		Summer	Winter
Cambridge, Isle of Ely, Huntingdon. Bedford	Horsemen, cowmen, shepherds	59	57
Cumberland, Westmorland, North Lancashire	Horsemen, cowmen, shepherds	63	63
Denbigh, Flint . . .	Teamsmen, cattlemen, cowmen, shepherds, bailiffs	61	58
Gloucester and certain parishes in Worcestershire	Horsemen	61	63
Do. do.	Stockmen or shepherds . .	63	63
Do. do.	Under horsemen. . . .	57	60
Do. do.	Under stockmen or under shepherds	60	60
Merioneth, Montgomery .	Stockmen, teamsters, carters or shepherds	61	58
Do. do.	Workmen wholly or partially lodged and boarded attending horses or stock	61	58
Northumberland . .	Shepherds	Customary	

The hours on which the minimum rates for workers in Cheshire were based were fixed at a later date at 54 per week all through the year.

It has been estimated by one of the employers' representatives on the Agricultural Wages Board that this reduction of hours by the general order of October raised earnings some 6 per cent. over those ruling under the order of May, and that the increase of rates and reduction in hours by the order of May had the result of increasing the earnings ruling in the later part of 1918 by some 21 per cent., the total effect of the two orders being to raise earnings some 29 per cent. above those ruling in the later part of 1918. My own estimate of the effect of the orders is that they raised earnings about 25 per cent. when the same hours as in 1918 were worked. But with frequent changes of rates, some applying only to single districts, and not all occurring at the same time, and with the provisions for overtime, and lack of information on the time worked, the computation of average earnings in 1918 and 1919 is an invidious task.

This order shows the rates existing at the end of the year, and for purposes of record is reprinted as an Appendix[1] to this review. The order dealing with rates for female workers is also printed.[2] But a summary of the orders dealing with rates for male workers is desirable.

One of the changes instituted in the general order of March, dealing with increases in rates, was the establishment of the age of 21 years for the application of the full minimum rate, whereas there were previously thirty-eight counties in which the minimum rate was payable at eighteen years, and fifteen counties in which it was payable at twenty-one years.[3]

There are twenty-nine districts in which no distinctions are made between the different classes of workmen. In these districts the rates payable at 21 years of age and over, with the number of occurrences, are as follows:—

Rate. *s.*	*d.*	No. of Districts in which Payable.
36	6	11
37	0	1
37	6	6
38	0	1
38	6	3
39	6	3
40	6	2
41	0	1
41	6	1

Including Cheshire, Norfolk, Suffolk, and Gloucester, to which special reference has to be made, there are eleven[4] Districts in which different rates are fixed for special classes (horsemen, teamsmen, shepherds, cowmen and cattlemen, bailiffs, &c.) and other workers (ordinary labourers or daymen). In the four districts named separate rates are fixed for divisions of the special classes.

In Cheshire these rates are fixed for workers 21 years of age and over:

Head stockmen, head teamsmen, head shepherds, 46*s.* 6*d.*

Second stockmen, second teamsmen, or second shepherds, 44*s.*

In Norfolk the general rate for all classes is 36*s.* 6*d.*; but it is provided that men wholly or mainly employed as teamsmen, cowmen or shepherds shall be paid an additional and inclusive sum of 7*s.* per week in respect of employment which is excluded from ranking as overtime employment; and in the case of sheeptenders and bullocktenders of a similar sum of 6s. In Suffolk there is a similar provision for the payment of 7*s.*

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[1] Appendix I. [2] Appendix III. [3] Vol. 79, page 140.

[4] It should be noted that although Hertfordshire and Middlesex form one "District," separate rates are provided for each county area. With Cheshire, there are, therefore, forty separate rates of wages, although there are only thirty-nine "Districts."

per week to men wholly or mainly employed as horsemen, stockmen or shepherds.

In Gloucester, the following rates are provided for :—

Horsemen, 45*s.*; under horsemen, 41*s.* 6*d.*; stockmen or shepherds, 46*s.*; under stockmen or shepherds, 43*s.* 6*d.*

For the purpose of the summary, the means of these rates for special classes have been taken as follows :—

	s.	*d.*
Cheshire	45	3
Norfolk.	43	0
Suffolk	43	6
Gloucester	44	0

Taking the eleven districts in which there are distinctions between the special classes and other workers, the rates and the number of occurrences are :—

Special Classes			Other Workers		
Rates		No. of Districts in which payable	Rates		No. of Districts in which payable
s.	*d.*		*s.*	*d.*	
42	6	1	36	6	7
43	0	1	38	6	1
43	6	3	40	0	1
44	0	1	42	6	2
44	6	2			
45	3	1			
49	6	1			
50	6	1			

The average of the minimum rates of wages in the twenty-nine Districts in which no special classes are recognised is nearly 38*s.* per week, and in the eleven Districts in which the distinctions are made 40*s.* 4*d.* per week, making an average for the whole country of 38*s.* 9*d.* per week. In the Districts in which the distinctions are made between classes of workers the average rate for other workers (ordinary labourers) is almost exactly the same as the average rate in the Districts in which no distinctions are made. The average rate for the special classes is about 44*s.* per week. Taking 33*s.* per week as the average minimum rate of wages in the end of 1918 and the early part of 1919, the *increase in minimum rate of wages* during the year is 5*s.* 9*d.*, or 17 per cent. Lack of information on the amount of overtime worked makes the estimate of the increase in *earnings* almost impossible.

Overtime rates in the Districts in which rates are fixed for "all classes" are as follows :—

Week-days	No. of Districts in which payable	Sundays		No. of Districts in which payable
d.		*s.*	*d.*	
10	10	1	0	11
10½	12	1	0½	8
11	3	1	1	6
11½	4	1	1½	3
		1	2	1

In the districts in which rates are fixed for special classes and for other workers the overtime rates and the number of times they occur are :—

SPECIAL CLASSES				OTHER WORKERS			
Week-days		Sundays		Week-days		Sundays	
Rate	No. of Districts	Rate	No. of Districts	Rate	No. of Districts	Rate	No. of Districts
s. d.		*s. d.*		*s. d.*		*s. d.*	
0 10	7	1 0	7	0 10	7	1 0	7
0 10½	1	1 1	1	0 10½	1	1 1	1
0 11	1	1 1½	1	0 11	1	1 1½	1
1 0½	1	1 3	1	1 0	2	1 2	2
1 1	1	1 3½	1				

The minimum rates for boys and youths 14 to 21 years of age have to be divided between the Districts in which special classes are recognised, and those in which rates are fixed for all classes, although special classes are not recognised in the case of youths below 18 years of age. Taking first the Districts in which rates for special classes are fixed the average rates for youths of the special classes are :—

20 years	43s. 4d. per week.
19 "	42s. 0d. "
18 "	40s. 6d. "

For the "other workers" in these Districts the rates are :—

Age	Lowest and highest minimum rates		Predominant minimum rate	No. of Districts in which payable
	Lowest	Highest		
	s. d.	*s. d.*	*s. d.*	
20 years	35 0	41 0	35 0	8
19 "	34 0	40 0	34 0	8
18 "	33 0	39 0	33 0	8
17 "	26 0	31 0	26 0	7
16 "	20 0	25 0	22 0	7
15 "	18 0	21 0	18 0	9
14 "	14 0	16 0	14 0	9
Under 14 years . .	10 0	11 0	10 0	10

In the Districts in which rates are fixed for all classes the rates are :—

Age	Lowest and highest minimum rates		Predominant minimum rate	No. of Districts in which payable
	Lowest	Highest		
	s. d.	*s. d.*	*s. d.*	
20 years	33 6	39 6	35 0	14
19 "	32 6	38 6	34 0	13
18 "	31 6	37 6	33 0	14
17 "	25 0	30 0	26 0	23
16 "	20 0	25 0	22 0	23
15 "	18 0	21 0	18 0	25
14 "	14 0	18 0	14 0	25
Under 14 years . .	10 0	12 0	10 0	28

The value of board and lodgings for a 7 day week for male workers 19 years of age and over was 20*s.* in 1 District, 18*s.* in 25 Districts, 17*s.* 6*d.* in 3 Districts, 17*s.* in 2, 16 in 2, 15*s.* 6*d.* in 1, and 15*s.* in 5 Districts, in September of 1919.[1]

In connection with the increases in rates of wages in July, it was pointed out by the Agricultural Wages Board that the validity of permits of exemption was not affected by the revision of rates, but that workers holding permits might apply for revision, and the District Wages Committees could review on their own initiative the permits they had granted.

A new order dealing with rates of wages for female workers came into force on the 21st October. This reduced the general rate for workers 18 years of age and over, fixed in July, by one penny per hour. The weekly rate fixed for Northumberland in 1918 appears to have been maintained. Northumberland was included with "all other parts of England" in the provision for 6*d.* per hour in the order of July. In July it was proposed to raise the rate for weekly workers 18 years of age and over, fixed in 1918, from 22*s.* 6*d.* to 27*s.*, but the proposal was not confirmed.

There have been a very large number of changes of personnel on the District Committees. The functions of the Committees are advisory and administrative only, and it sometimes appears that the Board does not give due weight to the advice of the Committees, and the administrative work requires a fair amount of application, without having much intrinsic interest; and add to that the fact that neither farmers nor agricultural workers were as well organised when the Committees were formed as they are now, it is not surprising that many changes occur. In the matter of the criticisms that the Board does not give due weight to the opinions of the District Committees, it may be said that the members who make this criticism most frequently would probably pursue the courses taken by the Board if they had before them the same general considerations, and the same responsibilities. The most important change in personnel in connection with the Board itself during the year was the transference of the secretary (Mr. F. Popplewell) to the Trades Boards. This occurred in July, and was genuinely regretted by every member of the Board and its staff. In April Mr. Robert W. Hobbs resigned, and Mr. Alfred Mansell was appointed by the Royal Agricultural Society.

Every agriculturist, especially those interested in live stock, regrets that the subsequent decease of Mr. Hobbs has to be recorded.

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[1] Appendix II. (For full list of Values of Board and Lodgings see A. W. 429 a.)

On October 29th Sir Arthur Griffiths Boscawen, in reply to a question by Mr. Arthur Henderson, gave the total cost of the Agricultural Wages Board as follows :—Staff employed by the Agricultural Wages Board for England and Wales under Pt. II. of the Corn Production Act, comprises—58 officers at head quarters, 23 travelling inspectors, and 31 secretaries of District Wages Committees. Costs (*a*)—Salaries, (1) head office, 8,470*l.*, (2) inspectors 7,900*l.*, (3) secretaries of district wages committees 5,700*l.* ; (*b*) travelling expenses and subsistence allowances (1) inspectors 6,600*l.*, (2) local secretaries 1,000*l.*, (3) members of Agricultural Wages Board and District Wages Committees 12,000*l.* Total, 41,670*l.*

In connection with the general work of the Agricultural Wages Board, it may be noted that there has been some development of a system of conciliation and arbitration during the year, and that the Board has taken a part in this movement. In March, representatives were appointed to the Industrial Conference at the Ministry of Labour. The President of the Board of Agriculture called a conference to consider the question of establishing some machinery for dealing by conciliation with disputes that might arise between farmers and agricultural workers, and the Agricultural Wages Board appointed representatives to meet representatives of the National Agricultural Council. During the year, disputes were settled by conciliation or arbitration. And it is a hopeful sign that some matters to which importance is attached in localities have been settled by agreement between organisations of farmers and workers.

It may also, perhaps, be mentioned in this review that the conditions of labour in various other European countries have been subject to regulation both by statute and by agreement between employers and employees, and that the Labour Bureau of the League of Nations has had under consideration the recommendation of certain fundamental conditions of employment in agriculture. This may prove to be important to the English farmer, especially if regulations could be instituted in those countries whose exports compete with his own products. But if regulations were applied to European countries only, the effect could not be other than beneficial to the English agricultural community.

The Agricultural Club, a discussion club which was formed in connection with the Agricultural Wages Board, has continued to arrange for the reading and discussion of some very interesting papers on important subjects relating to the welfare of the industry.

On a close review of the work of the Agricultural Wages Board during the year, the conclusion has to be reached that the Board must be congratulated on the results of its deliberations, although many farmers who see only local needs and possibilities would only admit this very grudgingly, if at all. The Board provides a medium whereby conditions of employment can, by various methods, be regulated according to national requirements. There can be no doubt that the wages of the farm workers are higher than they would be if the Board were not in existence, and that farming costs also are higher. But, on the other hand, it will be better for the industry as a whole if conditions of employment are consonant with those in other industries, and a supply of labour of fair quality is retained.

Instead of relying on their traditional method of improving their condition, viz., emigration to other industries or other districts, the farm workers now have an opportunity of putting their case before organised employers, and also of hearing the statement of the employers' position and opinions. The employers, also, are in a much stronger position in that they are able to deal with the workers as a whole, and to ascertain the opinions and possible movements in relation to conditions of labour. In this connection it may be said that no agricultural institution has ever been kept more closely in touch with its constituents than the Agricultural Wages Board.

One of the outstanding features of the year's work has been the movement towards standardisation of conditions over the whole country, as for instance in the gradual abolition of the "customary hours" week, and the general levelling of hours on which the rates of wages are based. Some variations in conditions of employment are necessary to meet local requirements, but the more general the principal conditions become, the better for the industry as a whole. While this is the case, there is a little danger that the work of the Board will be so much facilitated by the making of general orders that there may be a temptation to make frequent revisions of conditions. If this happened it would be highly regrettable, for it would be far better to make conditions satisfactory, and as permanent as possible than to have frequent revisions either of hours or of wages. With the long cycle of production in some branches of farming, it is even more necessary that the employer should be able to see some distance ahead than in other industries, although fairly stable conditions over the greater part of a year, at least, are always desirable.

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APPENDIX I.

CORN PRODUCTION ACT, 1917.

AGRICULTURAL WAGES BOARD (ENGLAND AND WALES).

ORDER VARYING THE MINIMUM RATES AT PRESENT IN FORCE FOR MALE WORKERS IN CERTAIN AREAS IN ENGLAND AND WALES, TO COME INTO OPERATION ON THE 6TH OCTOBER, 1919.

The Agricultural Wages Board (England and Wales) hereby give notice, as required by the above Act, that they have made the following Order :—

1. The wages payable for employment in agriculture in each area described in Column 1 of the Schedule to this Order of male workmen of the respective classes and ages mentioned in Columns 2 and 3 of that Schedule shall be not less than wages at the respective rates specified in Column 4 of that Schedule for the hours specified in Column 5 thereof.

2. Provided that where a whole-time workman is employed by the week or any longer period, the wages payable to him for the hours of work agreed between him and the employer in any week (excluding hours of overtime employment) shall not be less than the amount specified in Column 4 of the said Schedule, and applicable to that workman, notwithstanding that those hours are less than the hours specified in Column 5 and applicable to him.

3. Provided also that in the case of a workman of less than 18 years of age to whom this Order applies the minimum rates and overtime rates shall, during the first two months of his employment in agriculture, be 20 per cent. less than the rates which, but for this provision, would be applicable to him under the preceding clauses of this Order.

4. The differential rates for overtime employment in each area described in Column 1 of the Schedule hereto of male workmen of the respective classes and ages mentioned in Columns 2 and 3 of that Schedule shall be the rates specified in Column 6 thereof.

5. For the purpose of the above rates, overtime employment shall mean :—(a) In the case of each of the said areas and of workmen of each of the said classes and ages such employment as is described in Column 7 of the Schedule to this Order; (b) in the case of all the said areas and workmen of all the said classes and ages (except in any case in which the application of this provision is expressly excluded by the said Column 7) all employment in excess of 6½ hours on a Saturday or on such other day (not being Sunday) in every week as may be agreed between the employer and the workman.

6. In the said Schedule the expression "employment in summer" shall mean employment during the period commencing on the first Monday in March and ending on the last Sunday in October, and the expression "employment in winter" shall mean employment during the rest of the year.

7. For the purpose of the above rates, the hours of work shall not include meal times, but shall include any time during which, by reason of weather conditions, an employer has prevented from working a workman who was present at the place of employment and ready to work.

8. This Order shall apply to all male workmen who are wholly or partly employed in agriculture within the meaning of Section 17 (1) of the Corn Production Act, 1917, in any area described in the Schedule to this Order during such time as they are so employed.

9. This Order shall come into operation on the 6th day of October, 1919.

10. From and after the date on which this Order comes into operation, the Orders heretofore made by the Agricultural Wages Board, and fixing minimum or overtime rates of wages, or defining overtime employment, shall be varied or cancelled so far as may be necessary to give effect to this Order.

SCHEDULE.

Containing Rates of Wages for Male Workmen, coming into force on the 6th October, 1919.

1	2	3	4		5		6		7
DESCRIPTION OF AREAS	Classes of Workmen	Ages	Minimum Weekly Wage		Hours per Week		Overtime Rates		Employment to which Overtime Rates apply in addition (except in the cases expressly excluded below) to the time on one week-day in each week for which Overtime Rates are payable under Clause 6 (*b*) above
					For employment in Summer	For employment in Winter	On Week-days	On Sundays	
			s.	*d.*			*d.*	*d.*	
1. The administrative counties of Anglesey and Carnarvon (except the parish of Llysfaen).	All Classes	21 years and over	36	6	50	48	10	1/-	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter." Clause 5 (*b*) of the above Order shall not apply in the case of any workman who under an agreement with his employer is entitled in each half-year either to one week's holiday on full pay or to payment of double pay for one week's work.
		20 and under 21	35	0			9½	11½	
		19 „ „ 20	34	0			9½	11½	
		18 „ „ 19	33	0			9	11	
		17 „ „ 18	26	0			7	8½	
		16 „ „ 17	22	0			6	7½	
		15 „ „ 16	18	0			5	6	
		14 „ „ 15	14	0			4	4½	
		Under 14 years	12	0			3	4	
2. The administrative county of Berks and the county borough of Reading.	All Classes	21 years and over	36	6	50	48	10	1/-	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	35	0			9½	11½	
		19 „ „ 20	34	0			9½	11½	
		18 „ „ 19	33	0			9	11	
		17 „ „ 18	26	0			7	8½	
		16 „ „ 17	22	0			6	7½	
		15 „ „ 16	18	0			5	6	
		14 „ „ 15	14	0			4	4½	
		Under 14 years	10	0			3	3½	
3. The administrative county of Buckingham.	All Classes	21 years and over	36	6	50	48	10	1/-	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	35	0			9½	11½	
		19 „ „ 20	34	0			9½	11½	
		18 „ „ 19	33	0			9	11	
		17 „ „ 18	26	0			7	8½	
		16 „ „ 17	22	0			6	7½	
		15 „ „ 16	18	0			5	6	
		14 „ „ 15	14	0			4	4½	
		Under 14 years	10	0			3	3½	

			s.	d.			d.	d.	
4. The administrative counties of Brecknock and Radnor.	All Classes .	21 years and over	36	6	50	48	10	1/-	All employment on a Sunday. All employment in excess of 53 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter." Clause 5 (*b*) of the above Order shall not apply in the case of any workman who under an agreement with his employer is entitled in each half-year either to one week's holiday on full pay or to payment of double pay for one week's work.
		20 and under 21	35	0			9½	11½	
		19 ,, ,, 20	34	0			9½	11½	
		18 ,, ,, 19	33	0			9	11	
		17 ,, ,, 18	25	0			7	8½	
		16 ,, ,, 17	20	0			5½	6½	
		15 ,, ,, 16	18	0			5	6	
		14 ,, ,, 15	14	0			4	4½	
		Under 14 years	10	0			3	3½	
5. The administrative counties of Cambridge, Isle of Ely, Huntingdon and Bedford.	Workmen employed wholly or mainly as horse-keepers, cowmen or shepherds, other than workers employed solely as stockmen and yardmen.	21 years and over	44	6	59	57	10	1/-	All employment in excess of 59 hours in any week (including Sunday) in "Summer." All employment in excess of 57 hours in any week (including Sunday) in "Winter." But so that no employment in connection with the feeding and cleaning of stock shall rank as overtime employment under Clause 5 (*b*) of the above Order.
		20 and under 21	42	6			9½	11½	
		19 ,, ,, 20	41	6			9½	11½	
		18 ,, ,, 19	40	0			9	11	
	Other Workmen .	21 years and over	36	6	50	48	10	1/-	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	35	0			9½	11½	
		19 ,, ,, 20	34	0			9½	11½	
		18 ,, ,, 19	33	0			9	11	
		17 ,, ,, 18	26	0			7	8½	
		16 ,, ,, 17	22	0			6	7½	
		15 ,, ,, 16	18	0			5	6	
		14 ,, ,, 15	14	0			4	4½	
		Under 14 years	10	0			3	3½	
6. The administrative counties of Cornwall and the Isles of Scilly.	All Classes .	21 years and over	37	6	50	48	10½	1/0½	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	36	0			10	1/-	
		19 ,, ,, 20	35	0			9½	11½	
		18 ,, ,, 19	34	0			9½	11½	
		17 ,, ,, 18	26	0			7	8½	
		16 ,, ,, 17	22	0			6	7½	
		15 ,, ,, 16	18	0			5	6	
		14 ,, ,, 15	14	0			4	4½	
		Under 14 years	10	0			3	3½	

SCHEDULE—*continued.*

1	2	3	4	5		6		7
DESCRIPTION OF AREAS	Classes of Workmen	Ages	Minimum Weekly Wage	Hours per Week		Overtime Rates		Employment to which Overtime Rates apply in addition (except in the cases expressly excluded below) to the time on one week-day in each week for which Overtime Rates are payable under Clause 5 (*b*) above
				For employment in Summer	For employment in Winter	On Week-days	On Sundays	
			s. d.			d.	d.	
7. The administrative counties of Cumberland and Westmorland, the county boroughs of Carlisle and Barrow-in-Furness, and the Petty Sessional Divisions of North Lonsdale and Hawkshead (including its detached part), in the administrative county of Lancaster.	Workmen employed wholly or mainly as Horsemen, Cattlemen or Shepherds.	21 years and over	50 6	63	63	11	1/1½	All employment in excess of 63 hours in any week (including Sunday). But so that no employment in connection with the feeding and cleaning of stock shall rank as overtime employment under Clause 5 (*b*) of the above Order. And so that the said Clause 5 (*b*) shall not apply in the case of a workman who under an agreement with his employer is entitled to the further sum mentioned in column 4.
		20 and under 21	49 6			11	1/1	
		19 „ „ 20	48 6			10½	1/1	
		18 „ „ 19	48 0			10½	1/0½	
		with the addition in the case of a workman of any of the above ages and classes who has been so employed for a full term (expiring at Whitsuntide or Martinmas) of a further sum equal to the amount of his weekly minimum wage specified above.						
	Other Workmen	21 years and over	40 0	50	48	11	1/1½	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	39 0			11	1/1	
		19 „ „ 20	38 6			10½	1/1	
		18 „ „ 19	38 0			10½	1/0½	
		17 „ „ 18	30 0			8½	10	
		16 „ „ 17	25 0			7	8½	
		15 „ „ 16	20 0			5½	6½	
		14 „ „ 15	15 0			4	5	
		Under 14 years	10 0			3	3½	
								Clause 5 (*b*) of the above Order shall not apply in the case of any workman (whether of the special class above described or not) who under an agreement with his employer (*a*) is entitled to the further sum mentioned in column 4, or (*b*) is entitled in each half-year either to one week's holiday on full pay or to payment of double pay for one week's work.

			s.	d.			d.	d.	
8. The administrative counties of Denbigh and Flint, and the parish of Llysfaen, in the administrative county of Carnarvon.	Workmen employed wholly or mainly as Teamsmen, Cattlemen, Cowmen, Shepherds or Bailiffs.	21 years and over	43	6	61	58	10	1/-	All employment in excess of 61 hours in any week (including Sunday) in "Summer." All employment in excess of 58 hours in any week (including Sunday) in "Winter."
		20 and under 21	42	0			9½	11½	
		19 " " 20	41	0			9½	11½	
		18 " " 19	39	6			9	11	
	Other Workmen	21 years and over	36	6	50	48	10	1/-	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter." Clause 5 (*b*) of the above Order shall not apply in the case of any workman (whether of the special class above described or not) who under an agreement with his employer is entitled in each half-year either to one week's holiday on full pay or to payment of double pay for one week's work.
		20 and under 21	35	0			9½	11½	
		19 " " 20	34	0			9½	11½	
		18 " " 19	33	0			9	11	
		17 " " 18	26	0			7	8½	
		16 " " 17	22	0			6	7½	
		15 " " 16	18	0			5	6	
		14 " " 15	14	0			4	4½	
		Under 14 years	10	0			3	3½	
9. The administrative county of Derby and the county borough of Derby.	All Classes	21 years and over	37	6	50	48	10½	1/0½	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	36	0			10	1/-	
		19 " " 20	35	0			9½	11½	
		18 " " 19	34	0			9½	11½	
		17 " " 18	26	0			7	8½	
		16 " " 17	22	0			6	7½	
		15 " " 16	18	0			5	6	
		14 " " 15	14	0			4	4½	
		Under 14 years	10	0			3	3½	
10. The administrative county of Devon and the county boroughs of Exeter and Plymouth.	All Classes	21 years and over	37	6	50	48	10½	1/0½	All employment on a Sunday. All employment in excess of 48 hours in any week (excluding Sunday) in "Summer." All employment in excess of 50 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	36	0			10	1/-	
		19 " " 20	35	0			9½	11½	
		18 " " 19	34	0			9½	11½	
		17 " " 18	26	0			7	8½	
		16 " " 17	22	0			6	7½	
		15 " " 16	18	0			5	6	
		14 " " 15	14	0			4	4½	
		Under 14 years	10	0			3	3½	

SCHEDULE—*continued.*

1	2	3	4	5		6		7
DESCRIPTION OF AREAS	Classes of Workmen	Ages	Minimum Weekly Wage	Hours per Week		Overtime Rates		Employment to which Overtime Rates apply in addition (except in the cases expressly excluded below) to the time on one week-day in each week for which Overtime Rates are payable under Clause 5 (*b*) above
				For employment in Summer	For employment in Winter	On Week-days	On Sundays	
			s. *d.*			*d.*	*d.*	
11. The administrative county of Dorset.	All Classes	21 years and over	36 6	50	48	10	1/-	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	35 0			9½	11½	
		19 " " 20	34 0			9½	11½	
		18 " " 19	33 0			9	11	
		17 " " 18	26 0			7	8½	
		16 " " 17	22 0			6	7½	
		15 " " 16	18 0			5	6	
		14 " " 15	14 0			4	4½	
		Under 14 years	10 0			3	3½	
12. The administrative county of Essex, the county boroughs of East Ham, Southend-on-Sea, and West Ham, and those parts of the metropolitan borough of Woolwich, in the administrative county of London, which lie north of the River Thames.	Workmen employed wholly or mainly in connection with the use of land for a market garden, under a contract of service or apprenticeship with an employer, who is engaged in the trade or business of market gardening.	21 years and over	42 6	50	48	10½	1/1	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
	Other Workmen	21 years and over	38 6	50	48	10½	1/1	
		20 and under 21	35 0			9½	11½	
		19 " " 20	34 0			9½	11½	
		18 " " 19	33 0			9	11	
		17 " " 18	26 0			7	8½	
		16 " " 17	22 0			6	7½	
		15 " " 16	18 0			5	6	
		14 " " 15	14 0			4	4½	
		Under 14 years	10 0			3	3½	

			s.	d.			d.	d.	
13. The administrative counties of Glamorgan and Monmouth, and the county boroughs of Cardiff, Merthyr Tydvil, Swansea, and Newport.	All Classes	21 years and over	41	6	50	48	11½	1/2	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter." Clause 5 (*b*) of the above Order shall not apply in the case of any workman who under an agreement in writing with his employer is entitled either (*a*) to one week's holiday on full pay in each half-year, or (*b*) to one fortnight's holiday on full pay in each year, or (*c*) to payment of double pay for one week's work in each half-year or for one fortnight's work in each year.
		20 and under 21	38	6			10½	1/1	
		19 " " 20	37	6			10½	1/0½	
		18 " " 19	33	6			9½	11	
		17 " " 18	28	6			7½	9	
		16 " " 17	24	6			6½	7½	
		15 " " 16	21	0			5½	6½	
		14 " " 15	18	0			4½	5½	
		Under 14 years	10	0			2½	3	
14. The administrative county of Gloucester, the county boroughs of Bristol and Gloucester and the parishes of Blockley, Cutsdean, Daylesford, and Evenlode, in the administrative county of Worcester.	Workmen employed wholly or mainly as Horsemen.	21 years and over	45	0	61	63	10	1/-	All employment in excess of 61 hours in any week (including Sunday) in "Summer." All employment in excess of 63 hours in any week (including Sunday) in "Winter."
		20 and under 21	43	0			9½	11½	
		19 " " 20	42	0			9½	11½	
		18 " " 19	40	6			9	11	
	Workmen employed wholly or mainly as Stockmen or Shepherds.	21 years and over	46	0	63	63	10	1/-	All employment in excess of 63 hours in any week (including Sunday).
		20 and under 21	44	0			9½	11½	
		19 " " 20	43	0			9½	11½	
		18 " " 19	42	0			9	11	
	Workmen employed wholly or mainly as Under Horsemen.	21 years and over	41	6	57	60	10	1/-	All employment in excess of 57 hours in any week (including Sunday) in "Summer." All employment in excess of 60 hours in any week (including Sunday) in "Winter."
		20 and under 21	40	0			9½	11½	
		19 " " 20	39	0			9½	11½	
		18 " " 19	37	6			9	11	
	Workmen employed wholly or mainly as Under Stockmen or Under Shepherds.	21 years and over	43	6	60	60	10	1/-	All employment in excess of 60 hours in any week (including Sunday). But so that in the case of each of the 4 classes of workmen above mentioned no employment in connection with the feeding and cleaning of stock shall rank as overtime employment under Clause 5 (*b*) of the above Order.
		20 and under 21	42	0			9½	11½	
		19 " " 20	41	0			9½	11½	
		18 " " 19	39	6			9	11	

1	2	3	4		5		6		7
DESCRIPTION OF AREAS	Classes of Workmen	Ages	Minimum Weekly Wage		Hours per Week		Overtime Rates		Employment to which Overtime Rates apply in addition (except in the cases expressly excluded below) to the time on one week-day in each week for which Overtime Rates are payable under Clause 5 (*b*) above
					For employment in Summer	For employment in Winter	On Week-days	On Sundays	
			s.	*d.*			*d.*	*d.*	
14. The administrative county of Gloucester, the county boroughs of Bristol and Gloucester and the parishes of Blockley, Cutsdean, Daylesford, and Evenlode, in the administrative county of Worcester.—*continued.*	Other Workmen	21 years and over	36	6	50	48	10	1 -	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	35	0			9½	11½	
		19 „ „ 20	34	0			9½	11½	
		18 „ „ 19	33	0			9	11	
		17 „ „ 18	26	0			7	8½	
		16 „ „ 17	22	0			6	7½	
		15 „ „ 16	18	0			5	6	
		14 „ „ 15	14	0			4	4½	
		Under 14 years	10	0			3	3½	
15. The administrative counties of Southampton and Isle of Wight and the county boroughs of Bournemouth. Portsmouth and Southampton.	All Classes	21 years and over	37	6	50	48	10½	1/0½	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	36	0			10	1/-	
		19 „ „ 20	35	0			9½	11½	
		18 „ „ 19	34	0			9½	11½	
		17 „ „ 18	26	0			7	8½	
		16 „ „ 17	22	0			6	7½	
		15 „ „ 16	18	0			5	6	
		14 „ „ 15	14	0			4	4½	
		Under 14 years	10	0			3	3½	
16. The administrative county of Hereford.	All Classes	21 years and over	36	6	50	48	10	1/-	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	35	0			9½	11½	
		19 „ „ 20	34	0			9½	11½	
		18 „ „ 19	33	0			9	11	
		17 „ „ 18	26	0			7	8½	
		16 „ „ 17	22	0			6	7½	
		15 „ „ 16	18	0			5	6	
		14 „ „ 15	14	0			4	4½	
		Under 14 years	10	0			3	3½	

			s.	d.			d.	d.	
17. The administrative county of Hertford.	All Classes .	21 years and over	38	6	50	48	10½	1/1	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	36	0			10	1/-	
		19 " " 20	35	0			9½	11½	
		18 " " 19	34	0			9½	11½	
		17 " " 18	26	0			7	8½	
		16 " " 17	22	0			6	7½	
		15 " " 16	18	0			5	6	
		14 " " 15	14	0			4	4½	
		Under 14 years	10	0			3	3½	
18. The administrative county of Kent, and the city and county borough of Canterbury and also that part of the administrative county of London situate south of the River Thames which formerly constituted part of the geographical county of Kent.	All Classes .	21 years and over	39	6	50	48	11	1/1	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	38	0			10½	1 0½	
		19 " " 20	37	0			10½	1/0½	
		18 " " 19	36	0			10	1/-	
		17 " " 18	28	0			8	9½	
		16 " " 17	23	0			6½	7½	
		15 " " 16	18	0			5	6	
		14 " " 15	14	0			4	4½	
		Under 14 years	10	0			3	3½	
19. The administrative county of Lancaster—except the Petty Sessional Divisions of North Lonsdale and Hawkshead (including its detached part)—and the county boroughs of Blackburn, Blackpool, Bolton, Bootle, Burnley, Bury, Liverpool, Manchester, Oldham, Preston, Rochdale, St. Helens, Salford, Southport, Warrington and Wigan.	All Classes .	21 years and over	39	6	50	48	11	1/1	All employment on a Sunday All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter"
		20 and under 21	38	0			10½	1/0½	
		19 " " 20	37	0			10½	1/0½	
		18 " " 19	36	0			10	1/-	
		17 " " 18	30	0			8	9½	
		16 " " 17	25	0			7	8	
		15 " " 16	20	0			5½	6½	
		14 " " 15	15	0			4	5	
		Under 14 years	10	0			3	3½	
20. The administrative counties of Leicester and Rutland and the county borough of Leicester.	All Classes .	21 years and over	37	6	50	48	10½	1/0½	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	36	0			10	1/-	
		19 " " 20	35	0			9½	11½	
		18 " " 19	34	0			9½	11½	
		17 " " 18	26	0			7	8½	
		16 " " 17	22	0			6	7½	
		15 " " 16	18	0			5	6	
		14 " " 15	14	0			4	4½	
		Under 14 years	10	0			3	3½	

SCHEDULE *continued.*

1	2	3	4	5		6		7
DESCRIPTION OF AREAS	Classes of Workmen	Ages	Minimum Weekly Wage	Hours per Week		Overtime Rates		Employment to which Overtime Rates apply in addition (except in the cases expressly excluded below) to the time on one week-day in each week for which Overtime Rates are payable under Clause 5 (*b*) above
				For employment in Summer	For employment in Winter	On Week-days	On Sundays	
			s. *d.*			*d.*	*d.*	
21. The administrative counties of the parts of Holland, Kesteven and Lindsey Divisions of Lincolnshire and the county boroughs of Grimsby and Lincoln.	All Classes	21 years and over	40 6	50	48	11½	1/1½	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	35 0			9½	11½	
		19 " " 20	34 0			9½	11½	
		18 " " 19	33 0			9	11	
		17 " " 18	26 0			7	8½	
		16 " " 17	22 0			6	7½	
		15 " " 16	18 0			5	6	
		14 " " 15	14 0			4	4½	
		Under 14 years	10 0			3	3½	
22. The administrative counties of Merioneth and Montgomery.	Workmen employed wholly or mainly as Stockmen, Teamsters, Carters, or Shepherds.	21 years and over	43 6	61	58	10	1/-	All employment in excess of 61 hours in any week (including Sunday) in "Summer." All employment in excess of 58 hours in any week (including Sunday) in "Winter."
		20 and under 21	41 6			9½	11½	
		19 " " 20	40 6			9½	11½	
		18 " " 19	39 6			9	11	
	Workmen who are wholly or partially boarded and lodged by their employer and whose duties include attending to horses and other stock.	17 and under 18	30 0	61	58	7	8½	But so that no employment in connection with the feeding and cleaning of stock shall rank as overtime employment under Clause 5 (*b*) of the above Order.
		16 " " 17	24 0			5½	6½	
		15 " " 16	21 6			5	6	
		14 " " 15	17 0			4	4½	
		Under 14 years	12 0			3	3½	
	Other Workmen	21 years and over	36 6	50	48	10	1/-	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	35 0			9½	11½	
		19 " " 20	34 0			9½	11½	
		18 " " 19	33 0			9	11	
		17 " " 18	25 0			7	8½	
		16 " " 17	20 0			5½	6½	
		15 " " 16	18 0			5	6	
		14 " " 15	14 0			4	4½	
		Under 14 years	10 0			3	3½	
								Clause 5 (*b*) of the above order shall not apply in the case of any workman (whether of the special classes above described or not) who under an agreement with his employer is entitled in each half-year either to one week's holiday on full pay or to payment of double pay for one week's work.

			s.	d.			d.	d.	
23. The administrative county of Middlesex, the city of London, and those parts of the administrative county of London (except the parts of the metropolitan borough of Woolwich) which lie north of the River Thames.	All Classes . . .	21 years and over	40	6	50	48	11½	1/1½	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	36	0			10	1/-	
		19 " " 20	35	0			9½	11½	
		18 " " 19	34	0			9½	11½	
		17 " " 18	26	0			7	8½	
		16 " " 17	22	0			6	7½	
		15 " " 16	18	0			5	6	
		14 " " 15	14	0			4	4½	
		Under 14 years	10	0			3	3½	
24. The administrative county of Norfolk and the county boroughs of Norwich and Great Yarmouth.	Workmen of 18 years of age and over employed wholly or mainly as Teamsmen, Cowmen or Shepherds.	21 years and over	36	6	50	48	10	1/-	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter." But so that no employment in connection with the duties of feeding, cleaning, milking, bedding down and mucking out stock, or other similar duties, in connection with the immediate care of animals, shall rank as overtime employment either under this column or under Clause 5 (*b*) of the above Order.
		20 and under 21	35	0			9½	11½	
		19 " " 20	34	0			9½	11½	
		18 " " 19	33	0			9	11	
		with (in each case) an additional and inclusive weekly sum of 7*s.* in respect of employment which by Column 7 is excluded from ranking as overtime employment.							
	Workmen of 18 years of age and over employed wholly or mainly as Sheep-tenders or Bullock-tenders.	21 years and over	36	6	50	48	10	1/-	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter." But so that during the period of the year during which the workman is employed as mentioned in column 2, no employment in connection with the duties of feeding, cleaning, milking, bedding down and mucking out stock, or other similar duties, in connection with the immediate care of animals, shall rank as overtime employment either under this column or under Clause 5 (*b*) of the above Order.
		20 and under 21	35	0			9½	11½	
		19 " " 20	34	0			9½	11½	
		18 " " 19	33	0			9	11	
		with (in each case) during the period of the year during which the workman is employed as mentioned in Column 2 an additional and inclusive weekly sum of 6*s.* in respect of the employment which by Column 7 is excluded from ranking as overtime employment.							

			s.	d.			d.	d.	
23. The administrative county of Middlesex, the city of London, and those parts of the administrative county of London (except the parts of the metropolitan borough of Woolwich) which lie north of the River Thames.	All Classes . . .	21 years and over	40	6	50	48	11½	1/1½	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	36	0			10	1/-	
		19 " " 20	35	0			9½	11½	
		18 " " 19	34	0			9½	11½	
		17 " " 18	26	0			7	8½	
		16 " " 17	22	0			6	7½	
		15 " " 16	18	0			5	6	
		14 " " 15	14	0			4	4½	
		Under 14 years	10	0			3	3½	
24. The administrative county of Norfolk and the county boroughs of Norwich and Great Yarmouth.	Workmen of 18 years of age and over employed wholly or mainly as Teamsmen, Cowmen or Shepherds.	21 years and over	36	6	50	48	10	1/-	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter." But so that no employment in connection with the duties of feeding, cleaning, milking, bedding down and mucking out stock, or other similar duties, in connection with the immediate care of animals, shall rank as overtime employment either under this column or under Clause 5 (*b*) of the above Order.
		20 and under 21	35	0			9½	11½	
		19 " " 20	34	0			9½	11½	
		18 " " 19	33	0			9	11	
		with (in each case) an additional and inclusive weekly sum of 7*s.* in respect of employment which by Column 7 is excluded from ranking as overtime employment.							
	Workmen of 18 years of age and over employed wholly or mainly as Sheep-tenders or Bullock-tenders.	21 years and over	36	6	50	48	10	1/-	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter." But so that during the period of the year during which the workman is employed as mentioned in column 2, no employment in connection with the duties of feeding, cleaning, milking, bedding down and mucking out stock, or other similar duties, in connection with the immediate care of animals, shall rank as overtime employment either under this column or under Clause 5 (*b*) of the above Order.
		20 and under 21	35	0			9½	11½	
		19 " " 20	34	0			9½	11½	
		18 " " 19	33	0			9	11	
		with (in each case) during the period of the year during which the workman is employed as mentioned in Column 2 an additional and inclusive weekly sum of 6*s.* in respect of the employment which by Column 7 is excluded from ranking as overtime employment.							

SCHEDULE—*continued.*

1	2	3	4		5		6		7
DESCRIPTION OF AREAS	Classes of Workmen	Ages	Minimum Weekly Wage		Hours per Week		Overtime Rates		Employment to which Overtime Rates apply in addition (except in the cases expressly excluded below) to the time on one week-day in each week for which Overtime Rates are payable under Clause 5 (*b*) above
					For employment in Summer	For employment in Winter	On Week-days	On Sundays	
			s.	*d.*			*d.*	*d.*	
24. The administrative county of Norfolk and the county boroughs of Norwich and Great Yarmouth.—*continued.*	Other Workmen	21 years and over	36	6	50	48	10	1/-	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	35	0			9½	11½	
		19 „ „ 20	34	0			9½	11½	
		18 „ „ 19	33	0			9	11	
		17 „ „ 18	26	0			7	8½	
		16 „ „ 17	22	0			6	7½	
		15 „ „ 16	18	0			5	6	
		14 „ „ 15	14	0			4	4½	
		Under 14 years	10	0			3	3½	
25. The administrative counties of Northampton and Soke of Peterborough and the county borough of Northampton.	All Classes	21 years and over	36	6	50	48	10	1/-	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	35	0			9½	11½	
		19 „ „ 20	34	0			9½	11½	
		18 „ „ 19	33	0			9	11	
		17 „ „ 18	26	0			7	8½	
		16 „ „ 17	22	0			6	7½	
		15 „ „ 16	18	0			5	6	
		14 „ „ 15	14	0			4	4½	
		Under 14 years	10	0			3	3½	
26. The administrative counties of Northumberland (including the borough of Berwick-upon-Tweed) and Durham and the county boroughs of Newcastle-upon-Tyne, Tynemouth, Darlington, Gateshead, South Shields, Sunderland and West Hartlepool.	Workmen employed as whole-time Shepherds or wholly in tending sheep.	21 years and over	49	6	Hours customary in the area.	Hours customary in the area.			
		20 and under 21	48	0					
		19 „ „ 20	47	0					
	Other Workmen	21 years and over	42	6	50	48	1/-	1/2	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	41	0			11½	1/1½	
		19 „ „ 20	40	0			11	1/1½	
		18 „ „ 19	36	0			10	1/-	
		17 „ „ 18	28	0			8	9½	
		16 „ „ 17	23	0			6½	7½	
		15 „ „ 16	18	0			5	6	
		14 „ „ 15	14	0			4	4½	
		Under 14 years	10	0			3	3½	

SCHEDULE—*continued.*

1	2	3	4		5		6		7
DESCRIPTION OF AREAS	Classes of Workmen	Ages	Minimum Weekly Wage		Hours per Week		Overtime Rates		Employment to which Overtime Rates apply in addition (except in the cases expressly excluded below) to the time on one week-day in each week for which Overtime Rates are payable under Clause 5 (*b*) above
					For employment in Summer	For employment in Winter	On Week-days	On Sundays	
			s.	*d.*			*d.*	*d.*	
32. The administrative county of Stafford and the county boroughs of Burton-upon-Trent, Smethwick, Stoke-on-Trent, Walsall, West Bromwich, Wolverhampton and Dudley.	All Classes	21 years and over	38	6	50	48	10½	1/1	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	36	0			10	1/-	
		19 " " 20	33	0			9	11	
		18 " " 19	32	0			9	10½	
		17 " " 18	26	0			7	8½	
		16 " " 17	22	0			6	7½	
		15 " " 16	18	0			5	6	
		14 " " 15	14	0			4	4½	
		Under 14 years	10	0			3	3½	
33. The administrative counties of East Suffolk and West Suffolk and the county borough of Ipswich.	Workmen of 18 years of age and over employed wholly or mainly as Horsemen, Stockmen or Shepherds, whose whole time is occupied in looking after a flock of breeding sheep.	21 years and over	36	6	50	48	10	1/-	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter." But so that no employment in connection with the duties of feeding, cleaning, milking, bedding down and mucking out stock or other similar duties in connection with the immediate care of animals shall rank as overtime employment either under this column or under Clause 5 (*b*) of the above Order.
		20 and under 21	35	0			9½	11½	
		19 " " 20	34	0			9½	11½	
		18 " " 19	33	0			9	11	
		with (in each case) an additional and inclusive weekly sum of 7*s.* in respect of the employment which by Column 7 is excluded from ranking as overtime employment.							
	Other Workmen	21 years and over	36	6	50	48	10	1/-	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	35	0			9½	11½	
		19 " " 20	34	0			9½	11½	
		18 " " 19	33	0			9	11	
		17 " " 18	26	0			7	8½	
		16 " " 17	22	0			6	7½	
		15 " " 16	18	0			5	6	
		14 " " 15	14	0			4	4½	
		Under 14 years	10	0			3	3½	

			s.	d.			d.	d.	
34. The administrative county of Surrey and the county borough of Croydon and that part of the administrative county of London situate south of the River Thames which formerly constituted part of the geographical county of Surrey.	All Classes.	21 years and over	39	6	50	48	11	1,1	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	36	0			10	1/-	
		19 " " 20	35	0			9½	11½	
		18 " " 19	34	0			9½	11½	
		17 " " 18	26	0			7	8½	
		16 " " 17	22	0			6	7½	
		15 " " 16	18	0			5	6	
		14 " " 15	14	0			4	4½	
		Under 14 years	10	0			3	3½	
35. The administrative counties of East Sussex and West Sussex and the county boroughs of Brighton, Eastbourne, and Hastings.	All Classes.	21 years and over	38	6	50	48	10½	1 1	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	35	0			9½	11½	
		19 " " 20	34	0			9½	11½	
		18 " " 19	33	0			9	11	
		17 " " 18	26	0			7	8½	
		16 " " 17	22	0			6	7½	
		15 " " 16	18	0			5	6	
		14 " " 15	14	0			4	4½	
		Under 14 years	10	0			3	3½	
36. The administrative county of Warwick, the county boroughs of Birmingham and Coventry, and the parishes of Alderminster, Shipston-on-Stour, Tidmington, and Tredington, in the administrative county of Worcester.	Workmen employed wholly or mainly as Stockmen, Shepherds or Horsemen.	21 years and over	44	6	58	60	10	1/-	All employment in excess of 58 hours in any week (including Sunday) in "Summer." All employment in excess of 60 hours in any week (including Sunday) in "Winter." But so that no employment in connection with the feeding and cleaning of stock shall rank as overtime employment under Clause 5 (*b*) of the above Order.
		20 and under 21	41	0			9½	11½	
		19 " " 20	40	0			9½	11½	
		18 " " 19	39	0			9	11	
	Other Workmen	21 years and over	36	6	50	48	10	1/-	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	35	0			9½	11½	
		19 " " 20	34	0			9½	11½	
		18 " " 19	33	0			9	11	
		17 " " 18	26	0			7	8½	
		16 " " 17	22	0			6	7½	
		15 " " 16	18	0			5	6	
		14 " " 15	14	0			4	4½	
		Under 14 years	10	0			3	3½	
37. The administrative county of Wilts.	All Classes.	21 years and over	36	6	50	48	10	1/-	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	35	0			9½	11½	
		19 " " 20	34	0			9½	11½	
		18 " " 19	33	0			9	11	
		17 " " 18	26	0			7	8½	
		16 " " 17	22	0			6	7½	
		15 " " 16	18	0			5	6	
		14 " " 15	14	0			4	4½	
		Under 14 years	10	0			3	3½	

SCHEDULE—*continued.*

1	2	3	4	5		6		7
DESCRIPTION OF AREAS	Classes of Workmen	Ages	Minimum Weekly Wage	Hours per Week		Overtime Rates		Employment to which Overtime Rates apply in addition (except in the cases expressly excluded below) to the time on one week-day in each week for which Overtime Rates are payable under Clause 5 (*b*) above
				For employment in Summer	For employment in Winter	On Week-days	On Sun-days	
			s. d.			*d.*	*d.*	
38. The administrative county of Worcester (except the parishes of Alderminster, Blockley, Cutsdean, Daylesford, Evenlode, Shipston-on-Stour, Tidmington and Tredington) and the county borough of Worcester.	All Classes . . .	21 years and over	36 6	50	48	10	1/-	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter."
		20 and under 21	35 0			9½	11½	
		19 " " 20	34 0			9½	11½	
		18 " " 19	33 0			9	11	
		17 " " 18	26 0			7	8½	
		16 " " 17	22 0			6	7½	
		15 " " 16	18 0			5	6	
		14 " " 15	14 0			4	4½	
		Under 14 years	10 0			3	3½	
39. The administrative counties of the East Riding, the North Riding, and the West Riding of Yorkshire and the county boroughs of Kingston-upon-Hull, Middlesbrough, Barnsley, Bradford, Dewsbury, Halifax, Huddersfield, Leeds, Rotherham, Sheffield, Wakefield, and York.	All Classes . . .	21 years and over	41 0	50	48	11½	1/1½	All employment on a Sunday. All employment in excess of 50 hours in any week (excluding Sunday) in "Summer." All employment in excess of 48 hours in any week (excluding Sunday) in "Winter." Clause 5 (*b*) of the above Order shall not apply in the case of a workman who under an agreement in writing made with his employer and submitted to and approved by the Yorkshire District Wages Committee is entitled either (*a*) to one week's holiday on full pay in each half year, or (*b*) to one fortnight's holiday on full pay in each year, or (*c*) to payment of double pay for one week's work in each half year, or for one fortnight's work in each year.
		20 and under 21	39 6			11	1/1	
		19 " " 20	38 6			10½	1/1	
		18 " " 19	37 6			10½	1/0½	
		17 " " 18	30 0			8½	10	
		16 " " 17	25 0			7	8½	
		15 " " 16	20 0			5½	6½	
		14 " " 15	15 0			4	5	
		Under 14 years	10 0			3	3½	

APPENDIX II.

DETERMINATIONS OF THE VALUES OF "BENEFITS AND ADVANTAGES."

The values at which the provision by an employer for a workman employed by him of the "Benefits and Advantages" specified in the Order of the Agricultural Wages Board (England and Wales), dated September 6, 1918, may be reckoned as payment of wages in lieu of payment in cash for the purpose of any minimum rates of wages fixed under the above Act, have been ascertained and determined in accordance with the terms of the above-mentioned Order as follows (see footnote) :—

I. MILK.

	District Wages Committee Area	Price
NEW MILK .	All areas	6½*d.* per quart, or the wholesale price fixed for any particular district by the Local Food Control Committee for such district, *whichever is the lesser.*
SKIMMED OR SEPARATED MILK.	All areas	8*d.* per gallon.

II. POTATOES.

(*a.*) For Potatoes of the Second Grade.

Area	Price per ton		
	£	*s.*	*d.*
Kent	6	10	0
Surrey	6	10	0
Sussex	7	10	0
Wilts, Hants, Berks, Bucks, Oxford	7	0	0
Essex, Herts, Beds, Middlesex	6	10	0
Dorset, Somerset, Glos., Devon, Cornwall	6	10	0
Wales and Monmouth	6	10	0
Hereford, Worcester, Warwick, Shropshire, Stafford . .	6	5	0
Derby, Leicester, Northants, Rutland	6	5	0
Nottingham	6	0	0
Soke of Peterboro', from Black land	5	10	0
" " " other land	6	0	0
Yorkshire	6	0	0
Lincolnshire, from Black land	5	10	0
" " other land	6	0	0
Norfolk, from Black land	5	10	0
" " other land	6	0	0
Suffolk	6	10	0
Cambridge, Hunts, from Black land	5	5	0
" " " other land	6	0	0
Lancs. and Cheshire	6	10	0
Northumberland, Durham, Cumberland, Westmorland . .	6	5	0

(*b.*) For potatoes of the *first* grade (*i.e.*, potatoes of the varieties King Edward (or King Edward VII), Langworthy, What's Wanted, Maincrop, or Golden Wonder, 10*s.* per ton above those set out in the above Table.

N.B.—The determinations were originally published on February 4, 1919, but in the case of the values of allowances for board and lodging certain amendments have subsequently been made, the dates of the operation of which are indicated against the items affected.

III.—BOAR

(a) FOR MALE WORKEI

District Wages Committee Area	Full Board and Lodging for a 7-day week							Full Board 6-			
Age ...	19 and over	18 and under 19	17 and under 18	16 and under 17	15 and under 16	14 and under 15	Under 14	19 and over	18 and under 19	17 and under 18	16 un 1
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s.
†Northumberland and Durham	20 0	20 0	18 0	17 0	15 0	12 0	9 0	17 0	17 0	15 6	14
Berkshire ... ... Buckinghamshire ... Cambridgeshire, Huntingdonshire & Bedfordshire ... ... Cheshire ... ... Derbyshire ... ... Essex ... ... Hampshire ... ... Hertfordshire and Middlesex ... ... Kent ... ... Lancashire (except Furness District) ... Lincolnshire ... ... Norfolk... ... ... Nottinghamshire ... Oxfordshire ... ... Somerset ... ... Suffolk ... ... Sussex ... ... Warwickshire... ... Wiltshire ... ... Yorkshire	18 0	18 0	18 0	17 0	15 0	12 0	9 0	15 6	15 6	15 6	14
§Leicestershire and Rutland ... ... *Northamptonshire ... †Staffordshire... ...	18 0	18 0	18 0	16 6	15 0	12 0	9 0	15 6	15 6	15 6	14
†Surrey...	18 0	18 0	18 0	16 0	15 0	12 0	9 0	15 6	15 6	15 6	13
†Glamorgan and Monmouth	18 0	15 0	15 0	15 0	13 0	11 0	9 0	15 6	12 10	12 10	12
Cumberland, Westmorland and the Furness District of Lancashire ... ... Dorset ... ... Shropshire	17 6	17 6	17 6	16 6	15 0	12 0	9 0	15 0	15 0	15 0	14
*Gloucestershire ... Herefordshire... ...	17 0	17 0	17 0	16 0	15 0	12 0	9 0	14 7	14 7	14 7	13
*Cornwall ... ... Devonshire	16 0	16 0	16 0	15 0	13 0	11 0	9 0	13 9	13 9	13 9	12
‖Pembroke, Carmarthen and Cardigan .	15 6	15 6	12 6	12 6	11 0	10 0	9 0	13 4	13 4	10 9	10
‡Anglesey&Carnarvon Brecon and Radnor ... Denbigh and Flint ... ‡Merioneth and Montgomery ... ... Worcestershire ...	15 0	15 0	15 0	15 0	13 0	11 0	9 0	12 10	12 10	12 10	12

* As revised on 4th Augu 1919. † As revised on 14th July, 1919. ‡ As revised on 15th September, 19

AND LODGING.

OF ALL AGES.

Lodging for a week			Lodging only without food for a 7-day week							District Wages Committee Area
15 and under 16	14 and under 15	Under 14	19 and over	18 and under 19	17 and under 18	16 and under 17	15 and under 16	14 and under 15	Under 14	Age
s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	
12 10	10 3	7 9	3 6	3 6	3 6	2 6	2 6	2 6	2 6	†Northumberland and Durham
12 10	10 3	7 9	3 6	3 6	3 6	2 6	2 6	2 6	2 6	Berkshire Buckinghamshire Cambridgeshire, Huntingdonshire & Bedfordshire Cheshire Derbyshire Essex Hampshire Hertfordshire and Middlesex Kent Lancashire (except Furness District) Lincolnshire Norfolk Nottinghamshire Oxfordshire Somerset Suffolk Sussex Warwickshire Wiltshire Yorkshire
12 10	10 3	7 9	3 6	3 6	3 6	2 6	2 6	2 6	2 6	§Leicestershire and Rutland *Northamptonshire †Staffordshire
12 10	10 3	7 9	3 6	3 6	3 6	2 6	2 6	2 6	2 6	†Surrey
11 2	9 5	7 9	3 6	2 6	2 6	2 6	2 6	2 6	2 6	†Glamorgan and Monmouth
12 10	10 3	7 9	3 6	3 6	3 6	2 6	2 6	2 6	2 6	Cumberland, Westmorland and the Furness District of Lancashire Dorset Shropshire
12 10	10 3	7 9	3 4	3 4	3 4	2 6	2 6	2 6	2 6	*Gloucestershire Herefordshire
11 2	9 5	7 9	3 0	3 0	3 0	2 6	2 6	2 6	2 6	*Cornwall Devonshire
9 5	8 7	7 9	3 0	3 0	2 6	2 6	2 6	2 6	2 6	‖Pembroke, Carmarthen and Cardigan
11 2	9 5	7 9	2 6	2 6	2 6	2 6	2 6	2 6	2 6	*Anglesey&Carnarvon Brecon and Radnor Denbigh and Flint ‡Merioneth and Montgomery Worcestershire

§ As revised on 27th October, 1919. ‖ As revised on 30th May, 1919.

APPENDIX III.

CORN PRODUCTION ACT, 1917.

AGRICULTURAL WAGES BOARD (ENGLAND AND WALES.)

ORDER VARYING THE MINIMUM RATES OF WAGES AT PRESENT IN FORCE FOR FEMALE WORKERS OF 18 YEARS OF AGE AND OVER THROUGHOUT ENGLAND AND WALES, TO COME INTO OPERATION ON THE 14TH JULY, 1919.

The Agricultural Wages Board (England and Wales) hereby give notice, as required by the above Act, that they have made the following Order :—

1. The minimum and overtime rates of wages for female workers of 18 years of age and over throughout England and Wales shall be as follows :—

Area.	Minimum Rate per hour.	Overtime Rates per hour.	
		On Weekdays.	On Sundays.
(1) The administrative counties of Cumberland and Westmorland, the county boroughs of Carlisle and Barrow-in-Furness, and the Petty Sessional Divisions of North Lonsdale and Hawkshead (including its detached part), in the administrative county of Lancaster.	7d.	9d.	10½d.
(2) The administrative counties of the East Riding, the North Riding, and the West Riding of Yorkshire and the county boroughs of Kingston-upon-Hull, Middlesbrough, Barnsley, Bradford, Dewsbury, Halifax, Huddersfield, Leeds, Rotherham, Sheffield, Wakefield and York.			
(3) All other parts of England and Wales.	6d.	7½d.	9d.

2. Provided that during the first three months of a worker's employment in agriculture the minimum and overtime hourly rates set out in Clause 1 above shall be subject in each case to a deduction of ½d. an hour.

3. For the purposes of the above rates the following employment is defined as overtime employment, that is to say :—

(1) In all parts of England and Wales.

(a) All employment on a Sunday.

(b) All employment on a weekday before the hour of 7 a.m., or after the the hour of 5 p.m.

(c) All employment in excess of 6½ hours on a Saturday or on such other day (not being Sunday) in every week as may be agreed between employer and the worker.

(2) In the areas hereinafter mentioned (being the areas of District Wages Committees established by minutes of the Agricultural Wages Board), all employment on a weekday in excess of the number of hours hereinafter specified, that is to say :—

(a) In the Cambridgeshire, Huntingdonshire, and Bedfordshire; Cumberland and Westmorland; Derbyshire; Devonshire; Dorset; Hertfordshire and Middlesex; Kent; Northamptonshire; Nottinghamshire and Wiltshire areas—in excess of 8½ hours in summer and of 8 hours in winter.

(b) In the Cheshire, Lancashire, Shropshire, Glamorgan and Monmouth, and Merioneth and Montgomery areas—in excess of 8½ hours all the year round.

(c) In all other areas—in excess of 8 hours all the year round.

4. For the purpose of this Order the expression "summer" shall mean the period commencing on the first Monday in March and ending on the last Sunday in October, and the expression "winter" shall mean the rest of the year.

5. For the purpose of the above rates the hours of work shall not include meal times, but shall include any time during which, by reason of weather conditions, an employer has prevented from working a worker who was present at the place of employment and ready to work.

6. This Order shall apply to all female workers of the age of 18 years and upwards who are wholly or partly employed in agriculture within the meaning of Section 17 (1) of the Corn Production Act, 1917, in any area described in the Schedule to this Order during such time as they are so employed.

7. This Order shall come into operation on the fourteenth day of July, 1919.

8. From and after the date on which this Order comes into operation the Orders heretofore made by the Agricultural Wages Board and fixing minimum or overtime rate of wages or defining overtime employment shall be varied or cancelled so far as may be necessary to give effect to this Order.

CORN PRODUCTION ACT, 1917.

AGRICULTURAL WAGES BOARD (ENGLAND AND WALES).

MINIMUM RATES OF WAGES FIXED FOR FEMALE WORKERS IN CERTAIN AREAS IN ENGLAND AND WALES, TO COME INTO OPERATION ON THE 21ST OCTOBER, 1918.

The Agricultural Wages Board (England and Wales), duly established and constituted under Section 5 (1) of the above Act, and the Regulations made by the Board of Agriculture and Fisheries dated the 8th November, 1917, having given the Notice prescribed in the said Act and having considered all objections duly lodged with them, hereby give Notice, as required by sub-section 4 of the said Section and by paragraph 4 of the Agricultural Wages Regulations, 1918, that they have fixed the following minimum rates of wages and the following differential rates for overtime employment as hereinafter defined for female workers employed in agriculture for time-work in the areas hereinafter mentioned, and have defined for the purpose of the application of such differential rates for overtime the employment which is to be treated as overtime employment as follows, that is to say:—

1. The wages payable for employment in agriculture of female workers in the areas hereinafter mentioned shall be not less than wages at the rates following, that is to say:—

Areas	Minimum rates per hour for female workers of the ages mentioned below					
	18 years of age and over	17 and under 18 years of age	16 and under 17 years of age	15 and under 16 years of age	14 and under 15 years of age	Under 14 years of age
	d.	*d.*	*d.*	*d.*	*d.*	*d.*
The Yorkshire area and the Cumberland and Westmorland area as respectively described in the Schedule to this Order ...	6	5½	5	4½	4	3½
Any other area described in the said Schedule... ...	5	4½	4	3½	3	2½

2. The differential rates for overtime employment of the workers aforesaid in the areas hereinafter mentioned shall be as follows:—

Areas	Overtime rates per hour for female workers of the ages mentioned below											
	18 years of age and over		17 and under 18 years of age		16 and under 17 years of age		15 and under 16 years of age		14 and under 15 years of age		Under 14 years of age	
	On Weekdays	On Sundays	On Weekdays	On Sundays	On Weekdays	On Sundays	On Weekdays	On Sundays	On Weekdays	On Sundays	On Weekdays	On Sundays
	d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*
The Yorkshire area and the Cumberland and Westmorland area as respectively described in the Schedule to this Order	7½	9	7	8	6	7½	5½	7	5	6	4½	5
Any other area described in the said Schedule ...	6	7½	5½	7	5	6	4½	5	4	4½	3	4

3. Provided that in the case of a female worker the minimum rates and overtime rates shall during the first three months of her employment in agriculture be less by one halfpenny per hour than the rates which but for this provision would be applicable to her under the preceding clauses of this Order.

4. For the purposes of the above rates the following employment is defined as overtime employment, that is to say:—

(1) In all the areas described in the Schedule to this Order:

(a) All employment on a Sunday.

(b) All employment on a weekday before the hour of 7 a.m. or after the hour of 5 p.m.

(2) In the areas hereinafter mentioned all employment on a weekday in excess of the number of hours hereinafter specified, that is to say:—

(a) In the Cambridgeshire, Huntingdonshire and Bedfordshire; Cumberland and Westmorland; Derbyshire; Devonshire; Dorset; Hertfordshire and Middlesex; Kent; Northamptonshire; Nottinghamshire and Wiltshire areas described in the Schedule to this Order—in excess of 8½ hours in summer and of 8 hours in winter.

(b) In the Cheshire, Lancashire, Shropshire, Glamorgan and Monmouth, and Merioneth and Montgomery areas described in the said Schedule in excess of 8½ hours all the year round.

(c) In all other areas described in the said Schedule in excess of 8 hours all the year round.

5. For the purpose of the above rates the expressions "summer" and "winter" shall, as regards any area above-mentioned, bear the same respective meanings as they bear in the Order of the Agricultural Wages Board fixing minimum rates of wages for male workmen employed in agriculture in that area.

6. The above rates shall apply (according to the terms above set forth) to all female workers who are wholly or partly employed in agriculture within the meaning of Section 17 (1) of the Corn Production Act, 1917, in any of the areas above-mentioned, during such time as they are so employed.

7. For the purpose of the above rates the hours of work shall not include meal times, but shall include any time during which, by reason of weather conditions, an employer has prevented from working a worker who was ready at the place of employment and ready to work.

8. The above rates shall come into operation on the twenty-first day of October, 1918.

SCHEDULE.

Berkshire—

The area comprising the administrative county of Berks, and the county borough of Reading.

Buckinghamshire—

The area comprising the administrative county of Buckingham.

Cambridgeshire, Huntingdonshire, and Bedfordshire—

The area comprising the administrative counties of Cambridge, Isle of Ely, Huntingdon and Bedford.

Cheshire—

The area comprising the administrative county of Chester, and the county boroughs of Birkenhead, Chester, Stockport and Wallasey.

Cornwall—

The area comprising the administrative counties of Cornwall and the Isles of Scilly.

Cumberland and Westmorland—

The area comprising the administrative counties of Cumberland and Westmorland, the county boroughs of Carlisle and Barrow-in-Furness, and the Petty Sessional Divisional of North Lonsdale and Hawkshead (including its detached part) in the administrative county of Lancaster.

Derbyshire—

The area comprising the administrative county of Derby and the county borough of Derby.

Devonshire—

The area comprising the administrative county of Devon and the county boroughs of Exeter and Plymouth.

Dorset—

The area comprising the administrative county of Dorset.

Durham—

The area comprising the administrative county of Durham and the county boroughs of Darlington, Gateshead, South Shields, Sunderland and West Hartlepool.

Essex—

The area comprising the administrative county of Essex, the county boroughs of East Ham, Southend-on-Sea and West Ham, and those parts of the Metropolitan borough of Woolwich in the administrative county of London which lie north of the River Thames.

Gloucestershire—

The area comprising the administrative county of Gloucester, the county boroughs of Bristol and Gloucester, and the parishes of Blockley, Cutsdean, Daylesford and Evenlode in the administrative county of Worcester.

Hampshire—

The area comprising the administrative counties of Southampton and Isle of Wight, and the county boroughs of Bournemouth, Portsmouth and Southampton.

Herefordshire—

The area comprising the administrative county of Hereford.

Hertfordshire and Middlesex—

The area comprising the administrative counties of Hertford and Middlesex, the City of London, and those parts of the administrative county of London (except the parts of the Metropolitan Borough of Woolwich) which lie north of the River Thames.

Kent—

The area comprising the administrative county of Kent, and the city and county borough of Canterbury, and also that part of the administrative county of London situate south of the River Thames which formerly constituted part of the geographical county of Kent.

Lancashire—

The area comprising the administrative county of Lancaster—except the Petty Sessional Divisions of North Lonsdale and Hawkshead (including its detached part)—and the county boroughs of Blackburn, Blackpool, Bolton, Bootle, Burnley, Bury, Liverpool, Manchester, Oldham, Preston, Rochdale, St. Helens, Salford, Southport, Warrington and Wigan.

Leicestershire and Rutland—

The area comprising the administrative counties of Leicester and Rutland, and the county borough of Leicester.

Lincolnshire—

The area comprising the administrative counties of the Parts of Holland, Kesteven and Lindsey Divisions of Lincolnshire, and the county boroughs of Grimsby and Lincoln.

Norfolk—

The area comprising the administrative county of Norfolk and the county boroughs of Norwich and Great Yarmouth.

Northamptonshire—

The area comprising the administrative counties of Northampton and Soke of Peterborough and the county borough of Northampton.

Nottinghamshire—

The area comprising the administrative county of Nottingham and the county borough of Nottingham.

Oxfordshire—

The area comprising the administrative county of Oxford and the county borough of Oxford.

Shropshire—

The area comprising the administrative county af Salop.

Somerset—

The area comprising the administrative county of Somerset, and the county borough of Bath.

Staffordshire—

The area comprising the administrative county of Stafford and the county boroughs of Burton-upon-Trent, Smethwick, Stoke-on-Trent, Walsall, West Bromwich, Wolverhampton and Dudley.

Suffolk—

The area comprising the administrative counties of East Suffolk and West Suffolk, and the county borough of Ipswich.

Surrey—

The area comprising the administrative county of Surrey, the county borough of Croydon, and that part of the administrative county of London situate south of the River Thames which formerly constituted part of the geographical county of Surrey.

Sussex—

The area comprising the administrative counties of East Sussex and West Sussex, and the county boroughs of Brighton, Eastbourne and Hastings.

Warwickshire—

The area comprising the administrative county of Warwick, the county boroughs of Birmingham and Coventry, and the parishes of Alderminster, Shipston-on-Stour, Tidmington and Tredington, in the administrative county of Worcester.

Wiltshire—

The area comprising the administrative county of Wilts.

Worcestershire—

The area comprising the administrative county of Worcester (except the parishes of Alderminster, Blockley, Cutsdean, Daylesford, Evenlode, Shipston-on-Stour, Tidmington and Tredington) and the county borough of Worcester.

Yorkshire—

The area comprising the administrative counties of the East Riding, the North Riding, and the West Riding of Yorkshire, and the county boroughs of Kingston-upon-Hull, Middlesbrough, Barnsley, Bradford, Dewsbury, Halifax, Huddersfield, Leeds, Rotherham, Sheffield, Wakefield and York.

Anglesey and Carnarvon—

The area comprising the administrative counties of Carnarvon (except the parish of Llysfaen) and Anglesey.

Brecon and Radnor—

The area comprising the administrative counties of Brecknock and Radnor.

Denbigh and Flint—

The area comprising the administrative counties of Denbigh and Flint, and the parish of Llysfaen, in the administrative county of Carnarvon.

Glamorgan and Monmouth—
The area comprising the administrative counties of Glamorgan and Monmouth, and the county boroughs of Cardiff, Merthyr Tydfil, Swansea and Newport.

Merioneth and Montgomery—
The area comprising the administrative counties of Merioneth and Montgomery.

Pembroke, Carmarthen and Cardigan—
The area comprising the administrative counties of Pembroke, Carmarthen and Cardigan.

APPENDIX IV.

CORN PRODUCTION ACT, 1917.

AGRICULTURAL WAGES BOARD (ENGLAND AND WALES).

FURTHER DEFINITION OF EMPLOYMENT WHICH IS TO BE TREATED AS OVERTIME EMPLOYMENT FOR THE PURPOSE OF THE APPLICATION OF THE DIFFERENTIAL RATES OF WAGES.

TO COME INTO OPERATION ON THE 3RD MARCH, 1919.

The Agricultural Wages Board (England and Wales) hereby give notice, as required by paragraph 4 of the Agricultural Wages Regulations, 1918, that they have made the following Order:—

1. For the purpose of the application of all differential rates for overtime fixed by any Order of the said Board, and notwithstanding any reference in any such Order to the hours of employment customary in any area in the case of any special class of workman, the definition of employment which is to be treated as overtime employment is hereby extended so as to include the following employment, that is to say:—

All employment in excess of 6½ hours on a Saturday or on such other day (not being Sunday) in every week as may be agreed between the employer and the worker.

2. Provided that any time spent by Horsemen, Cowmen, Shepherds, Teammen and other classes of Stockmen in connection with the feeding and cleaning of stock shall be excluded from the foregoing extension of the definition of overtime employment.

The above Order shall come into operation on the third day of March, 1919.

THE WEATHER OF THE PAST AGRICULTURAL YEAR.

WHETHER the present-day troubles of the farmer,—the scarcity and cost of labour, the price of seeds, manures and feeding stuffs, and the constant increase in the cost of living—will all find in due time a more or less satisfactory solution is a matter upon which no one would dare to express any decided opinion. One thing is certain. Should these modern bugbears disappear, as if by magic, there would still remain the old anxieties associated with the weather, and for these, it is to be feared no adequate remedy will ever be found.

The agricultural season of 1918-19 could by no means be described as disastrous, but in common with so many of its predecessors, it often gave rise to serious misgiving, and occasionally to feelings of real despondency. Scarcely any portion of the twelve months brought, in fact, exactly the kind of weather the farmer would have desired. The winter was so wet that the ground fell into a sodden condition, and in the early spring, when warmth and drought were badly needed, the progress of the growing crops was seriously retarded by cold winds and a prolonged excess of rain. In May a change in the weather fortunately took place, and in response to much warm sunshine, vegetation made rapid progress. Owing to the previous long period of cold the hay crop proved, however, a short one, and in June and July the undue prevalence of Northerly winds hindered the growth of straw and rendered the grain crops thin and weakly. The harvest months, August and September, proved upon the whole favourable, but owing to previous adverse influences the wheat crop yielded in nearly all cases a poor result, as regard both condition and quantity. The autumn of 1919 witnessed a continuance of cold weather, but was fortunately very dry. Farm work was therefore enabled to proceed with little interruption, and as regards wheat, more especially, the prospects for the forthcoming season were more favourable than in many recent years.

THE WINTER OF 1918-19.

The winter was distinguished by great variations in the weather, but was upon the whole mild and very wet. The season opened with one of the warmest Decembers on record. In the earlier half of the month a current of air swept over the country from the equatorial regions of the Atlantic, and on the 3rd and 4th, and again between the 12th and 14th, the thermometer in the shade rose well above 55° in nearly all parts of the United Kingdom. On the former occasion it reached 60° in several isolated places (as far north even as Ross-shire), and on the latter occasion it touched 62° at Dublin and at Hawarden Bridge, in Cheshire. After the middle of December the mild Southerly breezes were replaced by colder winds blowing from West or North-West, and on the 19th, when these latter reached the force of a gale, snow fell heavily over the northern parts of England and Wales. Similar weather occurred on the 22nd and 23rd, with drifting snow in Yorkshire, and for some three or four days, commencing with the 20th, sharp frosts were experienced over North Britain generally, the sheltered thermometer in Central Scotland falling to between 15° and 20° below the freezing point. Just after Christmas the wind shifted temporarily to South or South-West and the weather became milder, but towards the close of the month a cold Northerly breeze sprang up, and showers of snow or sleet fell in many northern districts.

The New Year opened in a blustering fashion. On January 1 and 2 a deep cyclonic disturbance moved Eastwards across the country, and in its rear a strong gale from the North-Westward sprang up, with heavy snow in the northern and and central districts, causing in places much damage to the telegraph and telephone wires. Two or three days later the wind got back to the Southward, and at the close of the second week the mildest weather of the month was experienced, the sheltered thermometer rising to between 50° and 55° in most places. The temperatures recorded at this time were, however, not so high as those noticed at the beginning of December. The third week was marked by very changeable weather, the wind being mostly from some Westerly quarter, and about the 18th and 19th a sharp frost was experienced in North Britain. Over the country generally the coldest January weather occurred towards the end of the month, the wintry conditions being inaugurated by a very strong Northerly wind blowing in the rear of a cyclonic system which advanced from Iceland on the 26th and afterwards moved Southwards across Great Britain and France. Snow fell in all districts, and sharp night frosts were very common, the sheltered thermometer falling below 20° in several parts of England; at Wokingham on the 25th, and at Wellington (Shropshire) on the 29th it sank to 16°. Contrary to the usual experience the weather in January was much finer in the western than in the eastern portions of the country. At many places in Ireland and the south-west of England, the total duration of bright sunshine was more than twice as large as in the London district. More than double the normal amount of rain was experienced over a large portion of England, and at Kew the number of hours during which it was actually in progress was larger than in any January of the previous 38 years.

A spell of cold Easterly winds which set in at the close of January continued throughout the earlier half of February and served to lend some justification to the truth of the old saying "as the days lengthen so the cold strengthens." The sharpest frosts of the month, and in fact of the whole winter, occurred between February 5 and 9. Over England on the nights of the 7th—9th many places experienced at least 20° of frost, the lowest shade readings reported being 1° at Woburn, 8° at Chelmsford, and 9° at Garforth, Raunds and Hitchin. At Woburn on the night of the 8th a thermometer exposed on the grass went 3° below zero. Two cyclonic systems which moved Eastward, the one along the Channel on the 5th—6th, the other across northern France on the 16th—17th, caused very heavy rain in many parts of this country, and more especially in the south-western districts. On the 6th as much as 1·8 in.

of rain fell at Ashburton, 1·4 in. at Salcombe and 1·3 in. at Teignmouth and Fowey; and on the 16th, 2·0 in. was registered at Princetown, 1·4 in. at Plymouth and 1·3 in. at Swansea and Newport (Mon.). During the latter half of February the wind was mainly fro m West or South-West and the air was therefore much milder than it had been with the Easterly type of weather which had hitherto prevailed. Over England the highest temperatures were observed between the 20th and 23rd, when the thermometer in many districts rose to between 50° and 55°.

For the winter as a whole the mean temperature was above the average in all but the northern districts, the excess being greatest over our south-eastern counties. Rainfall was largely in excess of the normal, especially in the east of England and in the Scilly and Channel Islands. The total duration of bright sunshine agreed very closely with the average in the western districts but was rather deficient elsewhere, the cloudiest parts being very naturally, though not by any means inevitably, those in which the rainfall was most abundant.

THE SPRING OF 1919.

Until the beginning of May the spring season was distinguished by an abnormal prevalence of cold wet weather, and the growth of vegetation was therefore extremely slow. At the close of April observers in all parts of the country remarked on the unusual backwardness of the season; in Norfolk a correspondent stated that the cuckoo had not yet been heard, nor had swallows appeared. In May a radical improvement in the weather took place, and under the influence of much warm sunshine all field and garden crops made rapid growth. In some parts of the eastern and midland counties the change was so marked that in spite of the heavy rainfall of the previous four months the farmer was beginning at the close of May to complain of the deleterious effect of a long drought upon the corn crops, which were said to be short, yellow and dry.

March proved an extremely inclement month. On or about the 2nd a brief touch of mild weather was experienced, the thermometer rising to 55° and upwards in most districts, and touching 59° at Bath and Malmesbury. For the remainder of the time cold winds from West or North-West were experienced very commonly, with frequent, and in many cases heavy, falls of rain and occasional night frosts of considerable severity. Early on the 4th the sheltered thermometer fell to 12° at Chopwellwood, in Durham, and to 17° at Bellingham, and on the 23rd to 17° at Buxton. Strong North-Westerly gales were experienced on the 27th, and on the two following days, when a cyclonic disturbance moved across our southern districts to Belgium and Germany, a heavy fall of snow occurred in some parts of the south-eastern counties. In the course of the month nearly twice the average quantity of rain was experienced in the south-east of England, and nearly three times the average in the Midland counties.

Sharp frosts occurred at the beginning of April but in the earlier half of the month generally the wind was from West or South-West and the weather a trifle milder than in March. On the 18th and 19th a short burst of summer heat occurred, the shade temperature rising to between 65° and 70° in most districts and touching 72° at Weymouth. On the 20th, however, a strong Northerly wind sprang up, and, as a result, the midday temperatures on that day were about 15° lower than on the two preceding days. The worst weather of the whole month appears to have occurred during the closing week, and was associated with the passage Southwards of a cyclonic system over the Continent, with small secondary disturbances over the United Kingdom. On the 27th rain, followed by snow, was experienced very generally, the fall being especially heavy in the eastern and south-eastern counties. In many places the snow accumulated to a depth of between 10 and 12 in., a most unusual occurrence for so advanced a period in the season. It is, however, interesting to note that a still heavier snowstorm had been experienced at a very similar time (April 25) in 1908. At Bennington (Herts.), the combined rain and snow of the 27th yielded as much as 2·0 in. of water in the gauge, and at Halstead (Essex), 2·1 in.

May was ushered in by rather cold weather, slight night frosts being experienced in many districts between the 1st and and 3rd. A very welcome change was, however, at hand, and although the atmospherical conditions were for a time rather changeable, with thunderstorms in the south-eastern counties on the 9th, a marked improvement, which had already commenced in many districts, soon became general. At some few places in the east and south-east of England no appreciable rain fell between about May 2 and June 4, or for a period of nearly seven weeks, the month of May ranking as the driest for at least half a century. Sunshine was abundant. Over our south-eastern counties the mean daily duration for the whole month was nearly 8¼ hours, and in the eastern counties more than 8¾ hours, or considerably more than 2 hours in excess of the average. The warmest weather occurred as a rule on the 23rd, when the thermometer rose to 80° or a trifle above it in many parts of the country, and touched 83° at Kensington; in some districts the readings were almost as high on the 30th or 31st.

Owing to the cold of March and April the mean temperature of the entire spring was below the average, the deficit being slight in the north-east, but rather large in the south-western district. Over the eastern portions of the country the total rainfall differed but little from the normal; elsewhere there was a rather large excess, amounting to as much as 38 per cent in the Scilly and Channel Islands. The aggregate duration of bright sunshine was in most districts a trifle above the average.

THE SUMMER OF 1919.

The summer weather of 1919 was of a very mixed character, occasional bursts of high temperature being interspersed with longer spells of cloud and rain. In some few instances the unfavourable change set in very suddenly, and was due to the inrush of cold winds from the Northward. Throughout the greater part of the season there was, in fact, a marked and unusual tendency for the prevalence of polar breezes, accompanied in many instances by much cloud and abnormally low temperatures. One of the most notable features in the weather of the season was the singular rarity of thunderstorms and the consequent absence, in a comparative sense, of the torrential falls of rain, which usually appear in so many scattered places during an ordinary summer. One of the most notable exceptions to this rule occurred on June 12, when Ireland and the west and south of Scotland were visited by a storm of unusual severity, accompanied by at least two or three inches of rain. Near Branxholme, in the Teviot valley, exceptionally large hailstones covered the ground to a depth of between three and four inches and occasioned much damage to glass houses, trees and all garden crops.

June opened with a touch of very cold weather, and on the night of the 2nd a sharp ground frost occurred in many parts of the country, the exposed thermometer falling to 25° at Wisley and 24° at Greenwich and Rhayader. Next day several places in the north and east of England failed to record a maximum shade temperature as high as 60°; at Cromer and Norwich the thermometer did not rise much above 50°. Later on the English districts experienced about a fortnight of fine summer weather, and on three distinct occasions, viz., about the 7th, the 11th, and the 16th the thermometer rose to 80° or a trifle above it, a shade reading as high as 85° being reported at Hull on the date first mentioned. Between the 11th and the 13th, however, a cold Northerly wind sprang up, and on the latter date the thermometer in many places failed to reach 60°. Rain fell heavily over the eastern and south-eastern counties, but for the remainder of the month the weather was fairly dry. With winds from between West and

North and a cloudy sky the air was, however, decidedly cool. On the 26th there were many places in which the midday temperature was below 55°, and on the following night a ground frost occurred at several of the central and south-eastern stations.

In July the winds were almost constantly from the Westward or North-Westward, and in some cases even from North-East. The western districts were favoured with more than the average amount of sunshine, and consequently with a temperature not greatly below the normal. Over the greater part of England, and more especially in the eastern, midland and south-eastern counties, the sky was usually more or less cloudy, and the weather distinctly cool for the time of year. At Kew the mean maximum (or midday) temperature was lower than in any July since 1888, while the mean minimum (or night) temperature was the lowest for nearly fifty years past. Between the 10th and 12th, when an anticyclone spread temporarily over the country from the North-Westward, the cool Northerly winds died away, and on the 11th the thermometer rose to between 75° and 80°. A short spell of winds from South and South-West on the 18th heralded the approach of a cyclonic system from the Atlantic, and on the following day heavy rain fell in many districts. Later on, as the disturbance passed off to the Eastward, the wind again shifted to North-West or North, and the thermometer fell rapidly, the midday temperature at Kew on the 20th being only 54°, or as many as 23° lower than on the 18th. Towards the close of the month a more genial breeze from West and South-West set in, and on the 31st the thermometer in the east and south-east of England rose above 75°.

The beginning of August found the country under the influence of Westerly winds and rather changeable weather, but on the 2nd the thermometer in the South-East of England succeeded in rising to between 75° and 80°. After the 4th the conditions became more settled, and from this time onward to about the middle of the month a spell of brilliant summer weather was experienced, the duration of sunshine in the week ended the 16th amounting to between 75 and 80 per cent. of the possible amount at many places in the east and south-east of England. The highest temperatures occurred between the 9th and 12th, when the thermometer rose to 85° and upwards in several localities, and reached 88° at Woking. After about the 16th cool Westerly and South-Westerly winds set in, and the weather gradually became very unsettled, with occasional heavy falls of rain, and thunderstorms on the 17th in the east of England. In the closing week the wind rose to the force of a gale in many districts, and temperature fell very decidedly,

[Continued on page 21[illegible].]

Rainfall, Temperature, *and* Bright Sunshine *experienced over* England *and* Wales *during the whole of* 1919, *with Average and Extreme Values for Previous Years.*

Districts	RAINFALL							
	TOTAL FALL				NO. OF DAYS WITH RAIN			
	In 1919	For 53 years, 1866-1918			In 1919	For 38 years, 1881-1918		
		Average	Extremes			Average	Extremes	
			Driest	Wettest			Smallest	Largest
	In.	In.	In.	In.				
North-eastern	27·6	25·3	19·9 (1884)	37·2 (1872)	206	186	162 (1884)	208 (1894)
Eastern	25·8	25·0	19·1 (1874 and 1887)	33·1 (1872)	188	182	156 (1898)	205 (1894)
Midland	29·2	27·5	19·2 (1887)	39·8 (1872)	185	179	148 (1887)	210 (1882)
South-eastern	28·8	29·1	21·5 (1887)	41·7 (1872)	182	174	137 (1899)	197 (1882 and 1903)
North-western, with North Wales	32·1	37·7	24·9 (1887)	59·2 (1872)	195	200	163 (1887)	226 (1903)
South-western, with South Wales	39·1	41·6	28·3 (1887)	68·6 (1872)	201	200	159 (1887)	235 (1882)
Channel Islands[1]	39·6	32·8	26·2 (1887)	41·8 (1910)	209	209	169 (1899)	251 (1886)

Districts	MEAN TEMPERATURE				HOURS OF BRIGHT SUNSHINE			
	In 1919	For 53 years, 1866-1918			In 1919	For 38 years, 1881-1918		
		Average	Extremes			Average	Extremes	
			Coldest	Warmest			Cloudiest	Sunniest
	°	°	°	°				
North-eastern	46·3	47·5	44·8 (1879)	49·0 (1898)	1399	1344	1006 (1885)	1601 (1906)
Eastern	47·0	48·6	45·6 (1879)	51·0 (1868)	1520	1574	1267 (1888)	1864 (1899)
Midland	46·8	48·2	45·6 (1879)	51·1 (1868)	1408	1392	1156 (1912)	1715 (1893)
South-eastern	48·2	49·7	46·7 (1879)	51·4 (1898)	1570	1613	1245 (1888)	1983 (1899)
North-western, with North Wales	47·0	48·4	45·7 (1879)	50·3 (1868)	1435	1403	1198 (1888)	1683 (1901)
South-western, with South Wales	48·2	49·5	48·1 (1888)	52·8 (1868)	1649	1624	1294 (1912)	1964 (1893)
Channel Islands[1]	51·1	52·1	50·7 (1885)	54·3 (1899)	1806	1874	1636 (1913)	2300 (1893)

NOTE.—The above Table is compiled from information given in the Weekly Weather Report of the Meteorological Office.

[1] For the Channel Islands the "Averages" and "Extremes" of Rainfall and Mean Temperature are for the thirty-eight years, 1881-1918.

The Rainfall of 1919 *and of the previous Ten Years, with the Average Annual Fall for a long period, as observed at thirty-eight stations situated in various parts of the United Kingdom.*

Stations	1919		Rainfall of Previous Years										¹Average rainfall
	Total rainfall	Difference from average	1918	1917	1916	1915	1914	1913	1912	1911	1910	1909	
ENGLAND AND WALES:	In.	Per cent.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.
Durham	26·1	+ 6	22·6	26·0	27·2	26·0	25·9	23·4	29·2	23·0	24·9	24·8	24·8
York	23·8	— 2	25·4	22·0	23·9	24·6	26·3	20·5	33·0	25·1	24·6	24·8	24·3
Norwich	30·0	+13	28·9	28·3	32·7	30·0	27·6	24·4	35·0	26·7	31·8	27·8	26·5
Yarmouth	24·1	— 2	24·8	25·5	27·7	32·8	27·2	22·6	33·6	20·4	28·5	24·2	24·5
Cambridge	23·9	+10	25·4	22·7	23·8	24·1	23·3	18·7	27·3	19·0	22·8	23·1	21·8
Rothamsted	30·1	+13	27·6	27·6	31·7	32·4	27·4	22·0	33·6	27·6	29·7	26·8	26·7
Nottingham	28·0	+19	21·9	20·7	26·5	26·9	23·6	22·3	30·1	19·4	24·7	25·2	23·5
Cheadle	35·8	+13	34·7	33·9	34·2	34·5	37·7	31·2	38·9	23·8	36·5	37·7	31·8
Ross-on-Wye	25·2	—10	23·7	25·7	29·6	32·0	31·3	30·8	36·8	22·4	35·5	25·6	28·3
Coventry	29·9	+19	25·2	25·3	28·6	28·9	25·2	26·4	37·0	21·4	29·6	26·7	25·2
Oxford	26·3	+ 6	27·2	24·9	31·4	31·5	29·5	25·2	32·5	20·9	28·9	27·5	24·8
London (Kew)	24·3	+ 2	28·1	28·3	29·9	32·9	27·1	21·9	28·0	23·1	25·5	23·7	23·8
Tunbridge Wells	29·2	— 4	29·0	31·4	35·7	35·2	33·8	29·8	38·2	35·2	35·3	35·1	30·5
Southampton	33·5	+ 8	32·2	30·1	35·5	41·6	37·0	32·0	37·3	30·4	33·6	36·1	30·9
Stonyhurst	41·2	—12	59·2	44·5	49·2	42·4	50·1	42·1	54·1	44·2	53·3	48·8	46·6
Manchester (City)	34·1	0	44·3	34·7	33·3	33·8	35·3	29·8	40·6	31·1	37·5	37·0	34·3
Liverpool	29·1	+ 4	31·9	30·6	24·9	26·8	26·0	25·9	30·2	25·3	28·6	28·4	27·9
Llandudno	31·4	+ 5	30·7	26·6	29·9	33·2	31·3	31·8	33·0	30·5	36·7	32·0	30·0
Pembroke	30·3	—14	37·3	37·7	37·4	40·2	36·1	41·5	41·0	38·6	38·9	33·1	35·3
Clifton	34·9	—12	41·6	31·9	42·9	37·7	39·7	31·0	44·7	29·0	42·4	36·8	39·8
Cullompton	37·1	+ 5	37·9	32·5	44·6	40·0	41·9	37·4	47·8	35·0	46·8	34·4	35·3
Plymouth	41·3	+14	37·4	30·0	39·2	43·7	45·9	36·5	47·0	37·6	44·3	35·2	36·2
Scilly (St. Mary's)	33·3	+ 4	32·5	31·9	38·8	33·8	34·3	34·8	36·5	34·2	36·6	27·0	31·9
Jersey (St. Aubin's)	38·3	+14	28·1	30·4	34·9	35·9	38·1	26·5	43·3	31·7	44·4	31·7	33·5
²Mean for the whole of England and Wales	31·8	+ 3	31·3	29·3	34·0	33·4	33·4	29·0	36·8	28·8	34·5	31·3	30·8
SCOTLAND:													
Stornoway	52·4	+ 5	56·1	50·5	49·0	46·0	50·0	47·0	54·7	48·3	53·0	46·2	49·9
Wick	32·6	+ 9	32·2	31·3	28·0	26·4	28·7	24·6	32·5	27·4	32·5	33·6	29·9
Aberdeen	30·6	+ 4	29·4	28·2	35·6	32·4	28·7	23·8	29·3	27·5	27·7	30·4	29·5
Balmoral	32·6	— 3	31·3	30·6	42·3	43·0	38·8	31·2	38·3	29·9	37·5	38·8	33·7
Leith	25·6	+10	25·8	21·1	37·5	25·9	21·1	17·9	25·3	19·9	25·8	27·1	23·3
Marchmont	32.9	+ 2	28·0	33·3	45·0	33·6	29·1	26·1	31·9	31·7	28·9	34·2	32·2
Glasgow	31·3	—16	40·5	37·1	44·2	30·9	36·1	36·2	41·0	36·3	39·2	39·3	37·2
Dumfries	27·9	—24	39·3	32·4	37·5	32·8	31·3	33·2	40·1	37·3	43·8	43·2	36·1
²Mean for the whole of Scotland	40·5	— 8	45·6	43·8	48·7	38·5	38·5	40·4	45·4	41·7	43·2	41·8	44·2
IRELAND:													
¹ Donaghadee	32·0	+ 3	34·2	30·0	27·9	27·4	28·1	30·9	33·7	28·9	33·6	32·1	31·2
Markree Castle	45·3	+ 5	49·6	51·3	55·2	46·6	47·3	45·7	49·1	42·3	53·5	40·7	43·3
Armagh	29·2	— 8	35·2	34·6	37·0	29·2	32·1	35·1	35·8	27·6	32·5	28·9	31·8
Dublin	26·2	— 4	26·8	29·1	38·6	33·6	26·5	28·8	27·7	23·5	35·4	26·9	27·4
Ballinacurra (co. Cork)	29·9	—26	39·8	32·4	37·1	41·9	38·9	43·5	38·7	37·7	39·6	30·2	40·4
Kilkenny	26·7	—20	36·0	29·9	35·3	32·8	32·4	35·1	36·4	36·3	37·4	30·1	33·2
²Mean for the whole of Ireland	35·3	—12	41·6	37·6	42·9	38·8	38·8	41·9	41·0	36·5	41·0	35·3	40·1

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[1] The Average Fall is in nearly all cases deduced from observations extending over the thirty-five years 1881–1915.

[2] The Mean Rainfall for each country is based upon observations made at a large number of stations in addition to those given above.

[Continued from page 207.]

the maximum reading at Tynemouth and Liverpool on the 28th being no higher than 50°. On the night of the 30th a sharp ground frost occurred in several parts of the country.

For the summer as a whole the mean temperature was below the average, the deficit being greatest in the East and South-East. Rainfall was everywhere deficient, the total amount in the western districts being less than three-fourths of the average. The duration of bright sunshine was appreciably below the normal in the eastern and south-eastern counties, and slightly below it in all other districts excepting the south-western, where there was a slight excess.

THE AUTUMN OF 1919.

The autumn was, upon the whole, fair and dry, the conditions being favourable for the ingathering of the harvest in the later districts, and also for the subsequent clearance of the land and the progress of autumn sowing. During a large portion of the season there was, as in the previous summer months, a marked tendency for the prevalence of winds from some Northerly quarter, and, as a result, the air was more often than not unusually cool for the time of year. Temperature reached its lowest level in the early part of November, when the entire country was visited by a spell of weather of unexampled severity for so early a period in the season. Severe frosts were followed towards the middle of the month by heavy snowstorms in many northern districts, a depth of more than a foot being attained in the Scottish Highlands.

September opened with mild changeable weather, and on the 1st heavy rain was experienced in the West and North. Shortly afterwards the conditions improved, and for about ten days a spell of brilliant sunshine was experienced, with abnormally high temperatures. Between the 10th and 12th the thermometer rose to a somewhat higher level than at any time during the orthodox summer season, shade readings of 85° and upwards being recorded on the 11th in many parts of England, and a reading of 90° at Raunds, in Northants. Next day, when a cool Northerly wind sprang up, a rapid fall of temperature occurred, the maximum reading of 57° at Nottingham being no fewer than 28° lower than that of the 11th. A very similar, though less marked, change occurred between the 18th and 20th, a fresh burst of warmth being followed by an inrush of polar winds and midday temperatures mostly below 55°. On the 20th snow fell on Exmoor and Dartmoor, and at night a sharp ground frost occurred pretty generally, the exposed thermometer falling to 17° at Rounton (N. Yorks) and 22° at Durham, Worksop and Wisley. Thunderstorms and heavy rain were experienced in the Thames valley on the 14th. During the week commencing with the 21st the wind was mainly Westerly and often strong in force, with cool changeable weather, but in the closing days of the month the air became calm, and between the 27th and 29th sharp frosts were again experienced. On the night of the 28th the exposed thermometer fell to 15° at Rhayader and 19° at Greenwich and Richmond (Surrey).

In October the wind was again mainly from some Northerly quarter (between North-West and North-East) and the weather was, therefore, with a few exceptions, cold for the time of year. Sunshine was, however, abundant, especially in the southern districts, and the total rainfall in what is ordinarily the wettest month in the year was unusually small. At Kew it was the driest October since the year 1866. In the first and third weeks the wind was rather variable, with bright sunny days, but cold foggy nights. The second week was cold, with sharp night frosts, the exposed thermometer falling on the night of the 14th to a little below 20° in several parts of England. Towards the close of the month strong Northerly winds set in, with showers of snow or sleet, and heavy rain over northern England, the total amount at Rounton (N. Yorks) in the three days ended the 29th being not far short of 3 in. The unusual prevalence of ground frost in October is shown by the fact that at Kew, and on an average of twelve years' observations, such a visitation does not occur on more than 7 occasions; last October it occurred on as many as 19.

November opened with cold Easterly winds, and in the second week the thermometer fell to a lower level than at any similar time in the year during the past half century. The sharpest frosts occurred between the 12th and 15th, when the sheltered thermometer fell below 15° in many parts of England, below 10° at some of the northern stations, and considerably below zero in Scotland. At Balmoral the thermometer on the 14th did not rise more than 10° above zero all day. Snow or sleet fell in all districts, and thunderstorms occurred on the 11th in the north-east of England. After the middle of the month a mild Westerly breeze sprang up, and on or about the 23rd the thermometer touched 60° in several isolated places, thunderstorms occurring on the 20th in Lancashire and North Wales. In the closing week, however, the wind again veered round to the North-West and North, and the weather became decidedly cold, with snow or sleet in many places, and thunderstorms on the 28th in the south-west of England.

With the repeated prevalence of so much cold it was not surprising to find that the mean temperature of the autumn was considerably below the average, the deficit being greatest in the southern districts. Rainfall was in excess of the normal in the midland and north-eastern counties, but below it elsewhere; in the south-east of England, where little more than half the average amount was recorded, the season was one of the driest autumns on record; at Greenwich it was the driest since that of 1834. The total duration of bright sunshine was a trifle in excess of the normal.

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FREDK. J. BRODIE.

THE CORN TRADE IN 1919.

NOBODY in 1919 knew quite whether the war was or was not over, but so far as the inquiry to which this article is devoted goes, the return to peace conditions took place on May 1, when the Press Bureau was abolished and it ceased to be penal to print statistics of overseas shipments or of grain imports or to refer to the weather record of the British Isles. The International Bureau of Agriculture at Rome has undergone a most welcome revival, and with Sir Thomas Elliott as the resident representative of the British Empire may be expected to command the respect and credence of the English agricultural world. The figures that secure his endorsement will not be suspected as tendencious, and we may even hope that he will be able to take up the story of the international grain trade at the point where it was interrupted by the war. The seven years record of prices obtained by British farmers shows wheat stationary, but barley and oats decidedly dearer on the year.

	Wheat (per 480 lb.)	Barley (per 400 lb.)	Oats (per 312 lb.)
1919	72·10*	74·6	52·8
1918	72·7*	59·0*	47·3*
1917	75·10*	65·0*	51·3*
1916	58·3	53·4	51·2
1915	53·0	37·5	48·0
1914	35·1	27·2	47·0
1913	31·8	27·4	45·9

An asterisk denotes controlled prices. The wheat control is at 72*s.*, but a concession made by the Minister of Food to the Minister of Agriculture exempts seed corn, and this slightly enhances the average. Barley and oats are dearer not because of decontrol, but because the Government has maintained a strict control of maize and has so restricted the supply as to cause a rush to buy the alternative staples raised at home.

Prices of Empire produce for 1919 are now available, and thus compare with previous records :—

	Canadian Wheat (per 480 lb.)	Mauritius Sugar (per cwt.)	Indian Linseed (per ton)	Burmese Rice (per cwt.)
1919 .	78*s.**	100*s**.	50*l.*	26*s.* 3*d.**
1918 .	78*s.* 9*d.**	52*s.**	35*l.*	26*s.* 3*d.**
1917 .	92*s.*	45*s.**	27*l.* 10*s.*	21*s.**
1916 .	67*s.*	31*s.*	20*l.*	15*s.* 6*d.*
1915 .	54*s.*	15*s.*	12*l.*	12*s.*
1914 .	35*s.* 6*d.*	9*s.*	11*l.*	7*s.* 9*d.*
1913 .	38*s.*	9*s.* 6*d.*	11*l.*	9*s.* 10*d.*

The prices for wheat produced within the Empire were fixed by the Government on August 18, 1919, and the requirements made of buyers were averaged by the trade as equivalent to 18*s.* on to the price, thus No. 1 Canadian, Government price 60*s.*, was accepted as a real price of 78*s.* The other sorts of Empire wheat on this basis come at the following prices : No. 2 Canadian, 77*s.* ; No. 3, 76*s.* ; No. 4, 74*s.* 6*d.* ; No. 5, 72*s.* ; No. 6, 70*s.* 6*d.* ; Alberta red, 78*s.* ; Canada goose-wheat, 72*s.* No Indian wheat is allowed to be imported, but Australian at 78*s.* to 79*s.* is freely proffered. New Zealand and South Africa seem to have no exportable surpluses. The Government control of sugar has resulted in a great rise in price, but the like control of rice has been marked by two years' immobility in quotations. Linseed is dearer than it ever was before, but this only applies to Indian, the Argentine production having forged ahead of Empire growth somewhat disconcertingly. The Indian labour bill is lower than the Argentine, but the freights are higher and ships more difficult to procure from India than from Argentina.

Prices of staples produced outside the Empire include the following :—

	U.S. Wheat (per 100 lb.)	U.S. Oats (per 320 lb.)	Argentine Maize (per 480 lb.)	Java Sugar (per cwt.)
1919 .	15*s.* 9*d.**	54*s.*	68*s.**	66*s.**
1918 .	16*s.* 9*d.**	59*s.* 3*d.*	75*s.*	36*s.**
1917 .	15*s.*	49*s.* 9*d.*	67*s.*	32*s.**
1916 .	12*s.* 9*d.*	33*s.* 9*d.*	47*s.*	30*s.*
1915 .	10*s.* 6*d.*	30*s.*	29*s.*	22*s.*
1914 .	7*s.*	18*s.*	24*s.* 6*d.*	10*s.*
1913 .	7*s.* 5*d.*	20*s.*	25*s.*	6*s.* 9*d.*

The wheat price is that at which (plus 18*s.* per 480 lb. as already described) the Government has put U.S. wheat on sale. Private enterprise has been forbidden. Oats released from

Government control in the Spring have been more easily obtainable since. The price of Argentine maize has declined 7*s.* on the year, but the large crop in the United States in October, 1919, undoubtedly forced the hands of the Argentine holders. The enormous rise in Java sugar appears to be linked up with Government control, but there has been an effort made to increase production within the Empire which merits recognition. Unfortunately Jamaica and the Barbadoes, which are British, compete but feebly with Cuba, which is a neutral, and the Indian Empire is reducing its yearly output of sugar when Java, Sumatra and Melanesia are increasing their production.

A customary survey of breadstuffs prices within the range of the four articles—wheat, flour, bran and bread—enables us to measure what the producer gets for the by-product. The Government fixes bread very arbitrarily, but other nations have their experience of political considerations entering into prices for the loaf.

	Wheat (per 480 lb.)	Flour (per 280 lb.)	Bran (per ton)	Bread (per 4 lb.)
1919	72*s.* 10*d.**	44*s.* 3*d.**	250*s.**	9½*d.* *
1918	72*s.* 7*d.**	44*s.* 3*d.**	275*s.**	9*d.* *
1917	75*s.* 10*d.*	53*s.* 1½*d.*	300*s.*	9*d.*
1916	58*s.* 3*d.*	44*s.* 6*d.*	140*s.*	10½*d.*
1915	53*s.*	39*s.* 2*d.*	105*s.*	9*d.*
1914	35*s.*	26*s.* 6*d.*	120*s.*	7¼*d.*
1913	31*s.* 8*d.*	25*s.* 10*d.*	105*s.*	6½*d.*

The Government changes in policy over breadstuffs were never debated in the Parliament of 1919, an astonishing sign of how little interest the British people have in matters of distribution and administration. The determination to keep the price of flour unchanged, to lower the price of the by-products and to raise that of the main product, is not here in question; it is the fact of its importance being ignored that is surprising. The statistician of the future will be amazed (if the genus statistician be capable of amazement) at the disparities presented by bran and bread prices for 1916 and 1917 respectively, and he will wonder what the Government's aims in its price "readjustments" of 1919 really were.

Returns of imports into the United Kingdom are of especial value at the opening of a new campaign of *bonâ fide* peace conditions, and the writer very gladly obeys the suggestion of Members of the Royal Agricultural Society of England who have urged that in this instance a longer view than the "seven years" of home returns would be expedient. Figures since the opening of the twentieth century are here subjoined, the unit being millions of cwt. :—

	Breadstuffs	Maize	Barley	Oats
1919	89·1	16·9	16·7	6·8
1918	85·4	14·7	5·0	10·9
1917	105·8	25·0	9·1	12·6
1916	109·6	34·1	15·8	12·5
1915	97·0	48·5	12·2	15·6
1914	114·0	39·0	16·1	14·1
1913	122·3	49·0	21·7	18·3
1912	119·0	43·8	20·1	18·4
1911	108·0	38·6	24·5	18·2
1910	115·0	37·0	18·3	17·4
1909	108·9	39·3	21·5	17·8
1908	114·4	34·2	18·1	14·3
1907	116·1	53·3	10·3	19·2
1906	112·7	48·2	14·0	19·0
1905	114·0	42·8	16·0	23·0
1904	131·2	44·8	20·0	19·0
1903	110·0	50·1	26·4	16·3
1902	102·0	44·5	25·2	15·9
1901	93·0	51·4	22·1	22·5

The very remarkable problems of supply set by these returns will not admit of indefinite postponement. The imports of maize for 1901 to 1914 never fell below thirty-four million cwt., nor those of barley below ten millions, nor those of oats below fourteen millions. The home producer should now be greatly increasing his acres devoted to feeding barley, oats and pulse in order to meet the change of situation. Is he doing this ?

Passing to wheat production, it cannot, unfortunately, be said that 1919 repeated in the United Kingdom the favourable results of 1918. But for quite exceptionally fine harvest weather the out-turn would have been even less satisfactory. The withdrawal of 30,000 pivotal workers from agriculture in 1918 did not affect the harvesting except in cost and time; the produce was eventually secured. But it greatly affected autumn sowings and subsequent harrowings and the distribution of fertilisers. The decline in the yield per acre may have been mainly due to the season, but a contributory cause was probably existent in the use of inferior seed corn. A low maximum price for wheat has the effect of discouraging the use of good wheat for seed, as the better product resulting is saleable at no enhanced price to cover the increased cost of the selected seed grain. The Millers' Association before the war had identified itself very usefully with raising the home type of milling wheat, but the task is now one that farmers themselves must take up. The overseas wheat harvests were good in America, the Peninsula, Roumania, and Argentina. In Russia Nature was benign, man very much the reverse, and an increased yield per acre on a reduced area, both sown and reaped, causes us to average matters and repeat 1918–9 figures. The consideration of Russian food wants is greatly complicated by the fact that rye, not wheat, is the food of the masses, but for want of transport facilities the latter eat "the nearest" corn. Poor Marie Antoinette's suggestion that the breadless Paris mob should eat cake would have been sound economics had Paris been well stocked therewith, and it is what actually happens in Russia. Now the great rye areas in Russia are the Bolshevik areas, and rye culture has probably been gravely reduced. This would explain the desperate efforts of the Bolsheviks to press south into the great wheat area from Kieff to Taganrog. The wheat crops of France, Italy and Canada in 1919 were only mediocre, Australia's winter crop in December, 1919, and January, 1920, was deficient, but Argentina, as already remarked, had an excellent yield, though a wet harvesting somewhat affected condition.

The Wheat Production of leading Countries for seven years.

(Unit, millions of quarters, 480 lb.)

	Jan. 1, 1920	Jan. 1, 1919	Jan. 1, 1918	Jan. 1, 1917	Jan. 1, 1916	Jan. 1, 1915	Jan. 1, 1914
The U.K. .	9·0	11·7	8·6	7·2	9·5	7·8	7·1
The U.S. .	116·0	114·7	82·0	86·0	124·0	111·4	95·4
France . .	21·5	22·0	19·0	28·2	30·0	39·2	40·0
Italy . .	19·5	19·0	18·0	25·0	24·0	21·0	26·1
Peninsula .	20·5	20·0	21·0	19·5	18·0	15·5	15·0
Russia . .	70·0	70·0	80·0	105·0	111·0	101·0	120·0
Roumania .	10·0	7·0	6·5	12·8	13·6	6·0	10·0
Canada . .	25·0	24·0	29·0	20·0	34·0	20·0	30·0
India . .	38·0	46·0	46·9	40·0	48·0	40·0	45·0
Argentina .	26·0	22·0	27·3	16·1	16·4	15·4	16·2
Australia .	7·0	9·5	15·4	18·9	22·5	4·0	13·5
	362·5	365·9	353·7	378·7	451·0	439·3	418·3

The Indian crop in April, 1919, was returned officially at an improbably low figure, and grave political reasons then existing (and only disclosed in January, 1920) may have suggested the expediency of not letting any grain go out of the country. When peace conditions are finally re-established an independent inquiry into India's cereal production is most desirable; in the meanwhile we must accept official figures and be prepared for a large exportable surplus being disclosed later on. Orders prohibiting wheat exports from India and Persia were in force from April, 1919, onwards.

The wheat production of the world on January 1, 1919, gave a presumptive surplus of sufficient extent to make supply secure for the twelvemonth. Fact has endorsed these estimates, and the provisionment of the great areas of consumption in 1919 has been a matter of transport pure and simple. Over ten million quarters of wheat have accumulated to the order of our own Government in Australia, while America and Argentina carried over appreciable surpluses from one season to another. The equation on January 1, 1920, may be thus expressed :—

The World's Wheat Balance Sheet. (Qrs., 480 lb.)

	Production	Wants	Surplus	Deficiency
The U.K. . .	9,000,000	34,000,000	—	25,000,000
The U.S. . .	116,000,000	81,000,000	35,000,000	—
France . .	21,500,000	43,000,000	—	21,500,000
Italy . .	19,500,000	29,000,000	—	9,500,000
Peninsula . .	20,500,000	19,500,000	1,000,000	—
Russia . .	70,000,000	70,000,000	—	—
Roumania .	10,000,000	8,000,000	2,000,000	—
Canada . .	25,000,000	8,000,000	17,000,000	—
India . .	38,000,000	38,000,000	—	—
Argentina . .	26,000,000	9,000,000	17,000,000	—
Australia . .	7,000,000	5,000,000	2,000,000	—

Net surplus, 26,000,000 quarters.

The problem of 1920 wheat supply was from the first, and is at the present moment, complicated by two very special circumstances. The one consists in the large import needs of the great belligerent German empire. These amount to at least ten million quarters. The other relates to the pulverised Austria-Hungary of 1914, which, with 1920, has become a group of republics mostly hostile to one another. The Austro-Hungarian empire as a unit was in an average year self-supporting, but Austria proper and the Tyrol were large buyers of Hungary and the Slavonic South-east. The whole year will clearly be needed to adjust things in the international wheat trade, and the one reassuring feature is the fact that absolute production suffices to meet all needs tabled including those of Central Europe. Weekly returns of shipments and of supplies on passage have become available once more, and this legitimate publication of ruling factors has put an end to much speculation and surmise, the latter sometimes mischievous. Figures now legally publishable include the following :—(1) Breadstuffs shipments for 1919, 65,700,000 quarters. (2) United Kingdom imports of flour (included in breadstuffs returns but now separately returnable), 1918, 10,640,000 sacks ; 1919, 7,136,000 sacks. (3) Wheat shipments from Argentina, 1915, 11,120,000 quarters ; 1916, 10,200,000 quarters; 1917, 3,939,000 quarters; 1918, 11,960,000 quarters; 1919, 13,451,000 quarters. (4) London stocks, January 1, 1917, wheat 54,000 quarters, flour 65,000 sacks; January 1, 1920, wheat 42,181 quarters, flour 174,492 sacks. (5) Government deals in Australian breadstuffs during the war: "Shipped 187,173,000 bushels wheat, 48,506,000 bushels (?) flour; wheat stocks January 1, 1920, 84,000,000 bushels, flour 2,223,000 bushels (?), stock adjustment (?) 5,875,000 bushels." (6) Price paid by the Government for American wheat imported by them in 1919 95*s.* 5*d.* per 480 lb. (23*s.* 5*d.* above the maximum for English).

It is not from the writer that an apology is due to the reader for these *disjecta membra* of information on matters of importance to the wheat and flour trades. He can only hope that here and there the rescued figures may help a Member of the Royal Agricultural Society of England towards reconstructing a broken record.

Barley returns admit of only a partial reconstruction at present, but the yields of 1919 were tolerably well ascertained in ten countries. Unfortunately in two only, Argentina and Spain, were there good yields so far as bulk goes. The quality was good in the United Kingdom, India, Spain, and, it is believed, in Russia.

Barley Yields in Millions of Cwt.

	1919	1918	1917	1916	1915	1914	Pre-war average (1905-13) inclusive
The U.K. . .	25·0	27·3	28·0	25·5	22·0	32·0	29·0
The U.S.A. .	90·0	112·6	160·0	100·0	120·0	95·0	74·0
France . .	17·0	19·0	24·0	20·0	18·0	21·0	20·0
Italy . .	16·0	18·3	20·0	20·0	20·0	20·0	14·0
Peninsula .	36·0	32·0	40·0	38·0	37·0	30·0	22·0
Russia . .	140·0	150·0	160·0	175·0	185·0	190·0	200·0
Roumania .	12·0	8·0	7·0	10·0	11·0	12·0	11·0
Canada . .	36·0	38·0	44·0	26·0	24·0	22·0	30·0
Argentina. .	14·0	10·0	9·0	8·0	7·0	6·0	5·0
India . .	49·0	54·0	56·0	54·0	52·0	50·0	48·0
	435·0	449·2	538·0	476·5	496·0	478·0	453·0

It seems fairly clear that but for the short yields due to drought in India and to an adverse May in the United Kingdom, France and Italy barley production in 1919 would have attained the pre-war standard. With 1920 large barley areas in Persia, Syria, Mesopotamia and Bulgaria come under peace conditions, but no statistics are to be expected for some time. The good price made for barley in the United Kingdom in 1919 should stimulate production at home, while Canada seems capable of growing a large quantity of common feed barley to replace our pre-war dependence on Russia. Yields for 1915, 1916 and 1917 are very problematical owing to the suppression of figures and the supposed needs of concealment. The price of chief feeding barley from overseas gradually rose during 1919 from 74*s*. in January to 80*s*. in later December. The weight is 400 lb. The new year came in with a further advance, and February, 1920, closed with 84*s*. paid for No. 4 Canadian Western, a poorer type than any ordinary English sample.

The yields of oats in 1919 were below the average in the United Kingdom, France and Italy, but were large in Argentina; very large areas were sown in both the United States and Canada, and crops of 1,403,000,000 bushels and 442,000,000 bushels were indicated in the preliminary estimates. The United States definitive estimate in December, however, reduced the yield to 1,249,000,000 bushels, and Canada reduced her estimate in January to 389,000,000 bushels. The United States revision is so colossal as to excite distrust of all estimates at a time when an immense speculation in European import wants is going forward. Even if the revised figures from Washington, those which favour the holders for a rise, be the correct ones it seems clear that the British market cannot safely remain dependent on estimates which vary by 19,250,000 quarters between September and December. The home crop of oats seems to have been very badly hit by the dry May, but Scotland and Ireland suffered less than England.

Yields of Oats in Millions of Cwt.

	1919	1918	1917	1916	1915	1914	Pre-war average
The U.K. . .	66·0	86·4	75·0	68·0	79·0	70·0	60·0
The U.S.A. .	420·0	523·0	500·0	420·0	440·0	360·0	300·0
France . .	48·0	72·0	80·0	76·0	88·0	90·0	100·0
Italy . .	8·0	9·0	10·0	9·0	10·0	9·0	10·0
Peninsula .	7·5	8·0	10·0	9·0	14·0	12·0	8·0
Russia . .	180·0	200·0	250·0	300·0	380·0	360·0	286·0
Roumania .	8·0	5·0	6·0	7·0	8·0	8·0	7·5
Canada . .	130·0	108·0	80·0	100·0	120·0	90·0	94·0
Argentina .	36·0	20·0	20·0	8·0	20·0	25·0	10·0
Scandinavia .	56·0	55·0	54·0	53·0	52·0	51·0	50·0
	959·5	1086·4	1005·0	1050·0	1211·0	1075·0	925·5

Despite a series of drawbacks 1919 had surpassed the pre-war standard. We are in hopes of seeing a milliard cwt. level (1,000,000,000 cwt.) maintained in the future as a standard for the ten chief producing countries, and the trade which Russia has lost in oats (the oldest in the history of the English trade to the Baltic) will, we take it, go regularly to the New World with its open seaway. Argentina can treble her exports of oats by simply opening up her southern areas, while the Canadian north-west admits of as much expansion as population will allow, nothing but want of labour prevents the area under oats advancing at least a million acres yearly for an indefinite period to come.

The price of American oats during 1919 gradually fell from 62*s.* to 52*s.* for 320 lb., but a recovery to 54*s.* took place in January, 1920, in which month the new Argentine crop came on sale at 56*s.* per 320 lb. A great scarcity of heavy oats of overseas origin has prevailed without a break since 1916, and the home grower of oats which weigh 320 lb. to 336 lb. to the quarter can apparently now rely on an altogether special price and market. The growth of good quality oats within the United Kingdom is distinctly encouraged. The imports 1901–1915 included appreciable quantities of 336 lb. oats from Australia, New Zealand and Chilé, but the amazing freights now charged from these remote countries are fatal to trade, and the British grower of good oats is apparently not likely to be challenged for a good many years.

Maize yields in 1919 were large in America and Argentina, so that 1920 has "only" to get the surpluses across the Atlantic. It is an important qualification, however, and the allocation of tonnage for an article priced at 15*s.* to 20*s.* per cwt. is difficult. The competition of cotton, wool, tobacco, sugar, fruit, and other articles, worth much more per cwt., is extremely serious, as, roughly speaking, staples can bear freight in proportion to their selling value. The returns of maize yields are not of much trade importance outside two main crops, those of the United States and those of Argentina. The first of these yielded in October, 1919, 1,560,000,000 cwt. against 1,368,400,000 in 1918, and a pre-war average of 1,378,000,000 cwt. Argentina had in March, 1919, a crop of about 150,000,000 cwt. against a pre-war average of 128,400,000 cwt. Returns 1915–18 are somewhat disputed. The American home needs averaging it may be 1,300,000,000 cwt. and the Argentine 50,000,000 cwt., the exportable surpluses will stand at 260,000,000 cwt. for the United States and 100,000,000 cwt. for Argentina.

FARM SEEDS IN 1919.

With twenty-five to twenty-six million acres of the United Kingdom devoted to permanent grass, while five and a half to six and a half millions are under clovers, sainfoin, lucerne, and the rotation grasses plus annual and biennial lays, the importance of a good supply of grass and farm seeds is very great, and the seedsman is one of our fellow citizens who assuredly does not magnify his office. If of thirty million acres ten millions could be yearly resown the benefit to our agriculture would be enormous, and our need to import feeding stuffs would be greatly diminished. The season of 1919 was unequal; April was favourable, May very much the reverse, June did not have enough sunshine to suit the grasses which flower in that month, and July was only a mediocre month. But then August, September and October were all favourable, and the harvesting, threshing, and sifting out of the farm seeds crops was effected to much advantage. Probably the yields per acre were rather less than usual, but there was less waste than ordinary in securing them. Red clover seed seems unexpectedly scarce, and wild white clover seed has been the subject of a quasi-famine; in this case, however, the increase of demand is put by a leading firm at tenfold, and the increase of production would easily in such event be completely outrun. The French crop of lucerne seed was 20 per cent. deficient, though of fine quality, but Denmark had a good yield of cocksfoot, America of timothy. The rye-grass seed yield was good in Ayrshire and Lancashire, irregular in Norfolk. The Ulster reports are uncertain, but it is probable that a full average was secured and the weight was better than in 1918.

Farm Seeds Prices.

Shillings per cwt.

1919	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
ENGLISH—												
Red Clover Seed	255	268	250	240	240	240	260	250	240	230	250	250
White Clover Seed	320	320	300	280	290	280	240	260	280	270	260	260
Alsike	175	175	160	150	160	160	190	240	250	260	270	300
Single cut Cow Grass	500	525	550	500	450	350	400	380	370	350	400	400
Trefoil	150	170	150	140	145	160	150	145	145	140	130	140
Late Trifolium	110	125	115	95	100	90	75	75	70	65	80	90
Meadow Fescue	190	210	195	180	210	195	195	200	210	230	270	270
Milled Sainfoin	170	170	160	160	150	140	150	160	170	200	210	220
FRENCH—												
Lucerne	145	140	150	150	150	150	150	160	170	175	200	220
DANISH—												
Cocksfoot	185	175	170	185	155	150	150	155	160	145	145	145
AMERICAN—												
Timothy	110	110	80	80	80	90	85	90	90	90	90	95
Alsike	200	200	180	165	170	170	190	250	255	260	320	325
Red Clover Seed	253	248	248	270	260	250	245	245	275	300	290	290
NEW ZEALAND—												
Hard Fescue	190	210	190	180	210	210	210	220	240	270	270	270

The time appears to have arrived when the agricultural interest should bestir itself to cheapen the ordinary farm seeds or else secure at the above prices the fine products of the great seed farms, the names of whose owners are as household words. The National Institute of Agricultural Botany, founded July 15, 1918, and the Chamber of Horticulture, founded December 2, 1918, were expected particularly to promote the supply of good farm seeds as an aid to pastoral agriculture and food production. They could not do much for agriculturists in 1919.

The following figures, for the first time presented, may do a little to awaken farmers to the seriousness of the position. The prices are in shillings per cwt. for seven selected sorts :—

	Jan. 1920	Jan. 1919	Jan. 1918	Pre-War.
English Red Clover Seed.	260	255	170	60
Single-cut Cow Grass	400	500	240	90
Milled Sainfoin	220	170	70	40
Ulster Rye Grass	46	36	33	20
Danish Cocksfoot	145	185	170	65
French Lucerne	225	145	120	70
New Zealand Fescue	275	190	115	60

The following prices are in shillings per lb. for what are known as the dearer seeds :—

	Jan. 1920	Jan. 1919	Jan. 1918	Pre-War
Wild White Clover Seed.	30	20	15	5
Sweet Vernal	10	5	5	4
Kidney Vetch	8	7	6	3

The opening prices of 1920 included 45*s*. per 52 lb. for mustard seed ; 60*s*. per cwt. for Essex sowing rape seed ; 150*s*. per cwt. for crested dogstail ; and 200*s*. per cwt. for tall oat grass. The ordinary price of "lawn grass," a mixture at seller's judgment, was 1*s*. per lb.

OILSEEDS AND OILCAKE IN 1919.

With the decontrolling of these articles in progress throughout 1919 prices became more ascertainable and the values more trustworthy. The stages of control, decontrol, control by licenses, control by maxima, and so forth, were most tedious, but on the whole the trade was enabled to regain a considerable degree of independence, and for the last three months of 1919 its struggle was largely with the railways, which confessed themselves unable to move the supplies in time for late autumn stock-fattening, and the owners of motors and lorries whose charges were too often prohibitive. The following prices for oilseeds are in shillings per cwt., cash on delivery, but as a rule a ton was the lowest quantity that the seller would deliver, though he had no objection to selling a cwt. if the buyer could call for it.

	Linseed	Rape seed	Cotton seed	Soy Beans	Palm Kernels	Ground Nuts
1919	45*s.*	40*s.*	30*s.*	40*s.*	42*s.* 6*d.*	47*s.* 6*d.*
1918	33*s.* 6*d.*	30*s.*	19*s.*	—	26*s.*	32*s.*
1917	29*s.* 11*d.*	26*s.* 6*d.*	18*s.* 9*d.*	—	26*s.*	31*s.* 6*d.*
1916	20*s.*	17*s.* 6*d.*	14*s.* 4*d.*	—	—	30*s.*
1915	14*s.* 3*d.*	13*s.*	9*s.* 6*d.*	—	—	—
1914	12*s.* 3*d.*	12*s.* 6*d.*	8*s.* 3*d.*	18*s.*	—	—
1913	12*s.*	13*s.*	9*s.*	12*s.*	—	—
1912	13*s.* 3*d.*	13*s.* 3*d.*	8*s.* 6*d.*	10*s.*	—	—

While apologies are to be expressed for missing figures the reader will find the above table a material advance on any previous compilation. The greatly increased trade in the three articles rich in oil which have come to the help of the oilseed market has been a feature of the commerce of the country since the Armistice removed the submarine danger. Soy beans were not allowed to be imported during the war, and both palm kernels and Arachis nuts come largely from West Africa, which was the most submarine-infested of coasts. Those interested in the Elder Dempster Line will recall the time, and the spirited maintenance of the shipping service in spite of unique losses.

The prices of oilseed cake have risen on the year, but a much extended choice has followed on the large measure of decontrolling, and the farmer has seldom complained except of the difficulty in obtaining delivery. Prices are more complete than has hitherto been possible and include some new sorts of cake which are growing in favour with a free market. The Government in 1919 made compound cake a special and standardised article with analyses that have to be complied with, and so forth. The result has been a stabilised and much improved market. The following prices are in shillings per cwt., cash on delivery. Usual truck loads of 5 to 8 tons have naturally had precedence, and the smaller farmer is much in need of chandlers' aid in breaking up a "unit" such as the railways approve.

	1919	1918	1917	1916	1915	1914
Linseed Cake . .	25*s.*	19*s.*	20*s.* 9*d.*	14*s.*	11*s.* 3*d.*	8*s.* 3*d.*
Rape Seed Cake .	18*s.*	14*s.*	—	—	—	—
Cotton Seed Cake .	19*s.*	14*s.* 6*d.*	15*s.* 9*d.*	10*s.* 9*d.*	7*s.* 6*d.*	5*s.* 3*d.*
Sesame Cake . .	30*s.*	18*s.* 6*d.*	—	—	—	—
Compound Cake .	23*s.* 6*d.*	18*s.* 6*d.*	—	—	—	—
Soy Bean Cake .	24*s.* 9*d.*	19*s.*	17*s.*	13*s.* 6*d.*	10*s.*	—
Cocoanut Cake .	19s. 6*d.*	16*s.* 3*d.*	17*s.* 3*d.*	13*s.* 9*d.*	9*s.*	—
Palm Kernel Cake .	15*s.*	13*s.* 9*d.*	16*s.* 6*d.*	11*s.* 3*d.*	7*s.* 3*d.*	—
Decorticated Arachis Cake . . .	24*s.*	19*s.*	—	16*s.*	10*s.*	—
Ordinary Arachis Cake . . .	21*s.*	17*s.* 3*d.*	18*s.* 3*d.*	—	8*s.* 9*d.*	—
Cotton seed Meal .	24*s.*	20*s.*	22*s.*	15*s.* 9*d.*	—	—

The great demand for margarine in 1919 caused an extraordinary inquiry for edible oils, but this must remain outside the present article. The use of these oils, however, lays a tax on agriculture, and the farmers of tropical lands have to devote acreage to the plants and trees producing the commodity. Ultimately, therefore, an agricultural survey of production will be forced to include them among the crops.

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THE WOOL TRADE IN 1919.

WHEN the war broke out in 1914 the country was in "a betwixt and between mood" over wool production. The Australian clip controlled the British market. Speculation in wool in Australia was encouraged by the vast areas of unfit land which could be hired at a shilling and even sixpence per acre. These unfit lands lay between fertile Australia—itself larger than England, France and Italy, and with farms worth as much per acre as in favoured Europe—and desert Australia where nothing will grow. They were capable of feeding immense flocks of sheep in years when the rainy belt extended from fertile Australia over these contiguous areas. In dry seasons the sheep died, but then good years would "make a man." The extraordinarily low freights did the rest. Australia was very prosperous, the wealth per citizen of Australia exceeded that even of the United States, and Australian imports of comforts and luxuries from the old country and artistic Europe were very large. The vessels on their return journey brought the wool a voyage of 14,000 miles at charges little, if anything, above railway exactions for transit from Sussex to Scotland.

The very first call on the British Government, even before that for munitions, was in August, 1914, for wool. The Russian army needed seven million woollen overcoats to start with, France would be fighting in the Ardennes and the Vosges and the Jura. Our own army would need a complete winter equipment. A step was then taken which we have as a nation bitterly to regret. The flocks of both the United Kingdom and Australia were taken over by the Government; but whereas those of Australia were taken through the local administration and the local agricultural ministers, British wool was assigned to the War Office, which was able to commandeer the clips without any liability to pay for them.

It made certain payments, but only as acts of grace and favour, and as these sums were below the level of remuneration the keeping of sheep declined. There was, moreover, no consultation between the Minister of War, who was in the Cabinet, and the Minister of Agriculture, who was treated as an outsider. Thus when the latter fixed a minimum wage for shepherds in 1917, and raised it 6*s*. to 10*s*. a week in 1918, the War Office had no official knowledge of the occurrences, and made the farmer no just or corresponding increases in the money for his wool. Had Russia remained an ally there must have been a complete breakdown in the wool supply; but the treaty of Brest-Litovsk early in 1917, however it may have protracted the war, saved the Government our wool. It released 3,500,000 complete outfits destined for Russia, and of course it put an end to all further calls.

When in November, 1918, the war came to a conclusion so far that fewer and not more men had to be called, a policy of decontrol for wool became expedient, and it was announced in March, 1919, that the clip of 1919 would be free. The Australian clip of 1919 was, however, purchased. In June, 1919, home sales were resumed for the first time since the war, and it quickly became manifest that the War Office payments to farmers for these years had been at least 4,000,000*l*. annually below the market value of the clip. Prices mounting to their right price on a free market startled the country; but they have come to stay, at least for a spell of years, the rise in Australian freights of itself assuring this, and the chance of shipbuilding outpacing demand for ships being outside the range of all present reasonable probability.

With the decontrol of mutton the sheep becomes a profitable animal, and if this decontrol had taken place in 1919 flocks might have been built up to some extent already. The Food Controller unhappily was enabled to keep a hand on the English meat trade all through 1919, and wool by itself could not pay a dividend. The rise in prices has in the wool trade been much more remarkable for short than for long wool, and the public has demanded the higher qualities of wool to the comparative neglect of the lower grades. The Continental and American purchases on our market have been very fair, but have been rendered difficult by various Government restrictions. Australian and New Zealand merinos and crossbreds have sold very well indeed, South African, South American, and East Indian wools and skins less satisfactorily. The Australian consignors would help the market if when they send a good cross-bred they would specify with what English sheep the merino has been crossed. In some cases we believe the Romney Marsh cross has yielded fine prices, up to 84*d*.

per lb., and the Lincoln cross has also had its triumph. Speaking generally, however, we lack assurance on this point. The Irish wool sales have shown in almost all cases the highest prices going to the Shropshires kept in Ireland.

The following Tables may be of assistance to our readers :—

TWENTIETH CENTURY WOOL PRICES.

TABLE I.—*English Wool.*

Year	South Downs	Cheviots	Lincolns
	Pence per lb.	Pence per lb.	Pence per lb.
1901	8 to 9	5 to 8	6½ to 7
1902	8 „ 9	5 „ 8½	6 „ 6½
1903	9 „ 11	7 „ 9	7 „ 7½
1904	10 „ 12	10 „ 11	10¼ „ 10¾
1905	11 „ 13	12 „ 13	12¼ „ 12¾
1906	14 „ 17	13 „ 14	8 „ 8½
1907	13 „ 15	11 „ 12	8½ „ 9
1908	11 „ 13	18 „ 19	10¼ „ 10¾
1909	12 „ 14	12 „ 13	9¾ „ 10
1910	14 „ 15	12 „ 14	10¼ „ 10¾
1911	13 „ 15	13 „ 15	10¼ „ 10¾
1912	13 „ 16	13 „ 15	11¾ „ 12
1913	14 „ 16	13 „ 15	12¾ „ 13
1914	15 „ 17	12 „ 14½	12¾ „ 13
1915	20 „ 22*	16 „ 20½*	17¼ „ 17½*
1916	23 „ 25*	18 „ 21½*	19¾ „ 20*
1917	23 „ 25*	18 „ 21½*	19¾ „ 20*
1918	23 „ 25*	18 „ 21½*	19¾ „ 20*
1919	52 „ 54	36 „ 42	24 „ 27

An asterisk marks War Office control, and farmers did not get the full money in reality, as there were long delays of accounts and not a few deductions. The uncontrolled business is a ready-money one, and 90 per cent. of the home clip is sold between Midsummer and Michaelmas for cash.

TABLE II.—*Imported Wool.*

Year	Australian F.A.Q. unwashed	Fine merino washed	Good cross-bred	Low grade Colonial
	Pence per lb.	Pence per lb.	Pence per lb.	Pence per lb.
1913	11 to 13	24 to 36	18 to 30	10 to 11
1914	12 „ 13	26 „ 38	20 „ 32	11 „ 12
1915	13 „ 14	28 „ 40	30 „ 36	12 „ 13
1916	16 „ 19	36 „ 42	32 „ 40	14 „ 15
1917	36 „ 40	50 „ 60	40 „ 48	20 „ 22
1918	40 „ 48	64 „ 72	48 „ 54	21 „ 23
1919	48 „ 60	84 „ 96	60 „ 80	22 „ 26

TABLE III.—*Price of Tops.*

Year	Fine (super 60's)	Medium (50's)	Prepared (40's)
	Pence per lb.	Pence per lb.	Pence per lb.
1913	26 to 28	17 to 24	12 to 15
1914	27 ,, 32	18 ,, 26	14 ,, 19
1915	32 ,, 42	26 ,, 32	19 ,, 26
1916	42 ,, 60	32 ,, 42	26 ,, 32
1917	66 ,, 72	42 ,, 48	31 ,, 34
1918	70 ,, 74	48 ,, 52	34 ,, 37
1919	110 ,, 160	62 ,, 78	36 ,, 40

The first Table shows how short wool has appreciated, the index number of the rise, 1901–19 being 6·00 for short wool to 3·85 for long. Australian merino gives an index number 1913–19 of 2·66 to low grade colonial 2·36, but the Australian fine wool, as a whole, is much the most in request. Tops show the rush for quality better than anything else. The Empire production of wool is not easily estimated. In 1901 it was perhaps 800 million lb., in 1910 about 1,300 millions. It is believed for 1919 to have been about 1,200 millions.

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AGRICULTURAL STATISTICS, 1919.

[The Society is again indebted to the Ministry of Agriculture and Fisheries for their kindness in supplying, for inclusion in the Journal, the usual detailed and comparative tables of the latest agricultural statistics. For fuller information than can be given in the small space available here, the Department's own admirable series of Reports on Agricultural Statistics should, of course, be consulted.—ED.]

ACREAGE.

DETAILS of the acreage under the various crops, and of the numbers of live stock are given in Table I. As the cropping for 1919 was, of course, to a large degree determined in the Autumn of 1918 before the declaration of the Armistice, the acreage distribution for 1919 must be regarded as largely influenced by the exigencies of the war. It will be noted that, although the total area under crops and grass in England and Wales[1] decreased by over 239,000 acres (or nearly 1 per cent.), the acreage under the plough, which had been maintained during the closing years of the war at an abnormally high figure only by the strenuous efforts of the agricultural community backed up by the policy of the Government, accounted for only 89,764 acres of the diminution. The fact that the area of lands left to permanent pasture declined by 149,795 acres (*i.e.* nearly double the shrinkage of arable land) shows that there was no sign of a recrudescence of the process of the conversion of arable land to grass which had proceeded so steadily for many years prior to the commencement of the Food Production Department's activities in 1917. Regarding the returns for 1919 as recording the position at the end of the war, it is interesting to observe that the total area of arable land in England and Wales increased from the pre-war figure of 10,998,254 acres in 1914 to 12,308,876 acres in 1919 (*i.e.*, an increase of 12 per cent.) as compared with a decline in grass lands from 16,115,750 acres in 1914 to 14,439,077 in 1919 (a decrease of 10½ per cent.).

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[1] Although for purposes of reference Tables I. and II. give details also for the other parts of the United Kingdom, exigencies of space make it necessary to confine the review more particularly to England and Wales.

The acreage under **Wheat** in England and Wales fell to 2,221,195 acres, a reduction of 335,466 acres (13 per cent.) on the previous year, but, nevertheless, remained considerably above that for 1917, and 413,697 acres above the pre-war figure (1914) of 1,807,498 acres. Thus, although war-time efforts may have been slightly relaxed, a very favourable result was achieved. In Scotland, a small increase was recorded, but in Ireland the acreage fell from 157,326 to 69,727. Another considerable increase in the acreage under **Barley** is recorded, and this in spite of the fact that the 1918 figure was the highest for some years, and the use of barley for distillation was still restricted. The area under this crop was 1,509,716 acres, which showed an increase of 8,907 acres over 1918 and of 4,945 acres over 1914. The acreage of **Oats** on the other hand, showed a decrease, but was nevertheless 276,651 acres above the figure for 1895, which was the record prior to 1918. The area for 1919, which was 2,564,326 acres, represents a decrease of 8 per cent. since 1918, and an increase of 33 per cent. (634,700 acres) over 1914. The figures for Scotland and Ireland also showed some decrease since 1918, but were, nevertheless, very high as compared with previous years. The area devoted to the cultivation of **Rye**, like that for barley, continued to increase, the rise of 5 per cent. in 1919 following on an increase of 81 per cent. in 1918. The acreage in 1919 was 106,518 acres. The consequence of these variations in the acreage under the various cereal crops was that the total area in England and Wales of cereals as a whole stood in 1919 at 6,544,416 acres, a reduction of 536,068 acres (7½ per cent.) since 1918. The area was still 851,213 acres above that for 1917, however, and represented an increase since 1914 of

1,248,622 acres. The cereal acreage for the whole of the United Kingdom was 9,648,017 as against 10,527,900 in 1918, and thus whilst the relaxation of the unparalleled efforts made in that year had resulted in a certain reduction in the area under cereal crops, the margin over 1914 was nearly 2,000,000 acres.

The area under **Beans** in England and Wales which, until 1918, had continually decreased, showed an increase of 33,945 acres over that year, which, with the increase recorded last year, had produced a total rise since 1917 of 74,034 acres. The figure for 1919 was approximately the same as that under this crop just prior to the war. **Peas** also monopolised a larger area, the 163,479 acres in 1919 being the highest figure since 1914. The increase over 1918 was 13,375 acres. The area under **Potatoes** had shrunk by 158,456 acres since the previous year and was less by 32,611 acres than the figure for 1917, but it will be remembered that in those years the figures were abnormally high. The decrease since 1918 in the whole of the United Kingdom was 288,521 acres. Taking the main food crops together (*i.e.*, cereals and potatoes) there was a reduction in the United Kingdom of 1,168,404 acres (10 per cent.), of which 694,524 acres are attributable to the shrinkage in England and Wales.

In the case of **Root Crops** a very considerable increase occurred, for although the area under **Mangolds** decreased from 401,292 acres to 396,051 acres (a drop of 5,241), **Turnips and Swedes** showed an increase from 910,818 to 983,398 acres, or a rise of 72,580. The net result was an increase of 67,339 acres for all root crops. The pre-war figure of 1,477,461 acres was, however, not reached.

There was an all round increase in the area under **Rotation Grasses**, attributable no doubt chiefly to land used for wheat production during the stress of the later war years being no longer needed for that purpose. The area last year (2,258,435 acres) was an increase of 163,208 acres over 1918.

The acreage devoted to **Vetches and Tares** was recorded in 1918 as the lowest on record, and it is noteworthy therefore that last year the area under these crops in England and Wales rose by no less than 14,963 acres (24 per cent.). On the other hand, **Small Fruit** showed a further decrease of 6,980 acres. As regards the other minor crops, the most noticeable change was in the case of **Rape**, which increased from 60,096 acres to 93,233 acres.

LIVE STOCK.

The number of **Horses** (excluding non-agricultural horses) on farms in Great Britain continued to rise in 1919, but the increase in that year was very slight (1,551), the total standing at 1,338,379. A reduction in Ireland more than counterbalanced the augmentation in England, Wales and Scotland, so that the figure for the United Kingdom as a whole was less than in 1918. In England alone, practically no change had taken place. Horses used for agricultural work in England and Wales (including mares kept for breeding) numbered 814,198, a drop of over 8,000 since the previous year as against an increase of over 3,000 in Scotland. A further considerable decrease occurred in the case of Stallions, the number falling in England and Wales to 7,204 as against 7,707 in 1918. Thus in two years a reduction of 503 (6½ per cent.) has taken place, and the figure in 1919 was 296 less than that for 1914. Unbroken horses increased both in England and in Wales, the rise in the two countries together being 7,758. In Scotland there was a drop of 548, so that the total for Great Britain (375,483) was 7,160 (2 per cent.) greater than in 1918. It is satisfactory also to note that the number of foals in Great Britain increased by about 4,000.

As compared with the pre-war position, the total number of horses on farms in England and Wales decreased from 1,399,547 in 1914 to 1,386,824 in 1919, the variations in the different classes being an increase of 22,901 (3 per cent.) in horses used in agriculture (including breeding mares), an increase of over 10,000 in the unbroken "one-year-olds and above," and a decrease of nearly 50,000 in horses other than farm horses.

In the case of Cattle the total number in Great Britain rose from 7,410,327 in 1918 to 7,424,176 in 1919, an increase of 13,849. In England there was a decrease which was, however, outweighed by increases in Wales and especially in Scotland. The fact that the total number of cattle in the United Kingdom increased from 12,184,505 in 1914 to 12,491,427 in 1919 is highly satisfactory in view of the very high prices of feeding stuffs and of the general depletion of the herds of the other belligerent European nations. In England and Wales alone the number of cattle at the end of the war was 316,595 (6 per cent.) greater than at the close of the pre-war period.

The number of Cows and Heifers in milk and in calf in England and Wales in 1919 showed a decrease of 26,483 over 1918, but an increase of 67,263 compared with 1914.

The total number of cattle in England and Wales other than cows and heifers in milk and in calf increased from 3,622,519 in 1918 to 3,643,056 in 1919. As the official returns for the first time distinguish separately bulls used for service, it is not possible to compare the number of beef cattle (*i.e.* two-year-olds and over) in 1919 with the 1918 figures as the latter included such bulls. Excluding the 88,978 bulls for service the returns in 1918 showed a balance of 1,078,103, two-year-old beasts which was an increase of 77,434 over the gross figure of 1,000,769 in 1918. The young stock in England and Wales showed a serious falling off in 1918, there being a drop in 1918 of 67,119 in one-year-olds and of 80,656 in calves.

It will be recalled that in 1918 the number of sheep in Great Britain was the smallest on record, and that in two years alone the number had decreased by 1,650,000. It is therefore unsatisfactory to record a further drop of not less than 1,819,000. The effect of the War on the number of sheep is in striking contrast to the increase in the herds of cattle, the total number of sheep having declined in Great Britain from 24,285,514 in 1914 to 21,534,352 in 1919, and in England and Wales alone from 17,259,694 to 15,124,313 (*i.e.*, a drop of 12 per cent.). Unfortunately for the immediate prospects of the sheep-keeping industry, the number of ewes kept for breeding in England and Wales sustained a further decline in 1919, the total being returned at 5,764,300 as against 6,486,775 in 1918 when the figure was already nearly 400.000 below the corresponding figure for 1914. There was, however, a considerable increase in 1919 in the number of "other" sheep one year old and above, and it is interesting to note that for the first time the figure is available of the number of rams to be used for service which is given as 156,747. The number of lambs in England and Wales declined by no less than 1,035,714 (15 per cent.).

The decline in the number of pigs which became more and more serious each year of the War was slightly arrested in 1919, there being an increase in the total number of pigs in England and Wales of 100,000. This was trifling, however, compared with the fall of nearly 784,000 (over 30 per cent.) from the total of 2,481,481 in 1914 to 1,697,066 in 1918. Moreover, although there was an increase in the total number of pigs, the increase was confined to bacon pigs, the number of sows in England and Wales showing a drop of 38,788 (13 per cent.) in contrast to the increase of over 35,000 which had taken place in 1918. The statistics for the first time specified separately the number of boars used for service which will be noted was returned at 18,582 for England and Wales.

PRODUCE OF CROPS.

Whilst, as has already been seen, the arable land somewhat decreased in 1919, the reduction in the produce of the principal crops (Table II) was due not so much to this as to the decrease in the yield per acre, which was evident in almost every case. The production of Wheat fell in every part of the United Kingdom, the figure for England and Wales being 7,976,000 quarters as against 10,530,000 quarters in 1918, or a drop of 24 per cent. There was still, however, a margin of 811,000 quarters over 1917. In Scotland there was a surplus over the 1917 figure, but in Ireland the produce was only 306,000 quarters as compared with 711,000 in 1918 and 572,000 in 1917. The reduction in Ireland was, however, due principally to the decrease in acreage, the yield per acre having fallen only 1·1 bushel. The yield per acre fell in England from 31·1 bushels in 1918 to 28·7 bushels, with lesser reductions in the other parts of the United Kingdom. As already stated, the drop in Ireland was only 1·1 bushel, but it will be remembered that the yield in that country in 1918, unlike that in Great Britain, was below average. Comparing the yield with the average for the ten years 1909—1918, there was a trifling increase in Wales, with decreases ranging from 1·3 bushels in Scotland to 2·5 in England.

Except in the case of Scotland, where an increase due to a larger acreage is found, the produce of **Barley** decreased all round. In England and Wales the decrease amounted to 606,000 quarters, or 10 per cent., and in Ireland to 28,000 quarters. The produce in Scotland having risen from 677,000 quarters to 764,000 quarters (13 per cent. increase) the total reduction in the United Kingdom was 547,000 quarters. Since the acreage under this crop increased everywhere except in Wales it follows that the yield per acre suffered a serious reduction. In England, where the greatest drop occurred, only 28·9 bushels were produced per acre, against 32·5 in 1918 and the average of 32·0 in the previous ten years. In Wales the reduction compared with 1918 was only 0·6 bushels, and in Scotland 0·2, but in Ireland it was 1·6. The result so far as the United Kingdom as a whole was concerned was the production of only 30·9 bushels to the acre, as against 33·8 in 1918 and 33·4 on the average for 1909—1918.

As in the case of other main cereal crops the production of **Oats** fell considerably, the reduction being due to decreases both in acreage and in yield in all parts of the United Kingdom. Thus in England and Wales the total produce in 1919 stood at 11,417,000 quarters as against 14,339,000 quarters in the preceding year, a decrease of 2,922,000 quarters (20 per cent.), whilst the total decrease in the United Kingdom was 5,701,000 quarters. As compared with 1917, the decrease was 526,000 quarters. The yield per acre was everywhere below the average of the ten years 1909—1918, and considerably less than in 1918. The greatest reduction over 1918 was in England where the yield was 6·2 bushels per acre, or 4·2 bushels below the average. In Wales, Scotland and Ireland the decreases were less pronounced, the net result in the United Kingdom being a yield of 39·9 bushels per acre, as compared with 44·5 in 1918, and the ten year average of 42·6.

Converting the total produce of the three cereals to the principal equivalent weight of grain, the total for 1919 was 133,918,000 cwt., as against 164,516,000 cwt. in 1918, and the average for the five years immediately preceding the war of 118,954,000 cwt.

Though there was some reduction in the produce of **Beans** in Great Britain, the decline was by no means so serious as that in the case of cereals. At the time of writing no figures are available for Ireland in respect of this crop, or of that of peas. In Great Britain, however, there was a reduction of 34,300 quarters, by far the greater part of which was traceable to England, in spite of the considerable growth of the acreage in that country. Whilst only a small portion of the crop is grown in Wales, the percentage decrease there was much higher even than in England. The yield per acre was only 25·0 bushels in England and 25·5 bushels in Wales, as against 29·4 and 29·1 respectively in 1918. In Scotland, however, the figures were, 1919, 39·4 bushels; 1918, 36·5, whilst the average in that country was 36·8. The result is that the yield in Great Britain was 25·3 bushels, as compared with 29·6 in 1918 and the average for the previous 10 years of 27·9.

As regards **Peas** there was, owing to the increased acreage, a slight rise in the produce, though the yield per acre dropped. Nearly the whole crop is grown in England, where there was a margin in 1919 of 3,000 quarters over 1918. The yield was 26·7 bushels per acre, which is 0·8 bushels less than last year, and 1·9 bushels above the average.

The tremendous impetus given to the production of the **Potato** by the food shortage of 1917 and 1918 slackened very considerably in 1919, and, as in the case of other main crops, reduction in acreage and in yield combined to produce a great decrease in the crop. Thus, in England and Wales, only 2,733,000 tons were produced against 4,209,000 tons in the previous year, a reduction of 35 per cent. In Scotland the figure of 832,300 tons represent a decrease of 319,000 tons, whilst in Ireland the crop, which was about as large as that in England and Wales together, was 1,116,000 tons less than in 1918. The resultant total for the United Kingdom was 6,312,000 tons as compared with 9,223,000 tons in 1918 and 8,604,000 tons in 1917. There was a surplus over the 1916 crop, however, of 843,000 tons. In England and in Ireland, each of which grew nearly half the total crop, the yield per acre decreased by 0·9 and 0·8 tons per acre respectively, the average yield in England being 5·8 tons, and in Ireland 4·7 tons. The yield in the United Kingdom as a whole was also below average, the figure of 5·2 tons being 0·9 tons less than in the previous year, and 0·7 tons below the average.

[Continued on page [illegible]]

TABLE I.—Acreage under Crops and Grass; *and* Number *of* Live *Scotland, Great Britain, Ireland, and the United Kingdom*

—	England		Wales		Scotland[5]	
	1919	1918	1919	1918	1919	1918
	Acres		Acres		Acres	
Total Area (excluding water)	32,387,409		4,750,155		19,069,683	
Total Acreage under Crops and Grass[1]	24,069,298	24,262,040	2,678,655	2,725,472	4,751,475	4,761,101
Arable Land	11,412,353	11,463,679	896,523	934,961	3,408,479	3,453,495
Permanent Grass[1]	12,656,945	12,798,361	1,782,132	1.790,511	1,342,996	1,307,606
Wheat	2,150,281	2,460,695	70,914	95,966	79,509	79,062
Barley or Bere	1,405,643	1,394,861	104,073	105,948	173,746	152,835
Oats	2,252,151	2,414,561	312,175	365,502	1,110,811	1,243,823
Mixed Corn[2]	115,822	113,799	26,839	27,720	1,413	4,072
Rye	106,132	101,199	386	233	5,815	5,650
Beans	281,990	247,787	2,636	2,894	[9] 6,654	[9] 7,275
Peas	162,775	149,230	704	874	370	417
Potatoes	446,341	596,607	29,035	37,225	154,596	169,497
Turnips and Swedes	925,579	858,516	57,819	52,302	426,451	396,689
Mangold	382,982	388,077	13,069	13,215	2,507	2,552
Cabbage	50,825	38,178	757	655	3,673	3,829
Kohl-Rabi	9,437	12,963	192	85	[11] —	[11] —
Rape	79,396	54.312	13,837	5,784	10,752	2,848
Vetches and Tares	76,239	61,449	723	550	[10] 12,605	[10] 15,697
Lucerne	38,519	39,885	242	184	8	6
Hops	16,745	15,666	—	—	—	—
Small Fruit	58,096	65,053	603	626	6,104	6,381
Clover, Sainfoin, and Grasses under Rotation	2,009,385	1,875 363	249,050	219,864	1,403,134	1,354,290
Other Crops	204,942	170,302	2,103	1,792	3,435	3,743
Bare Fallow	639,073	405,176	11,366	3,542	6,896	4,829
	No.	No.	No.	No.	No.	No.
Horses used for Agricultural purposes[3]	728,509	734,381	85,689	88,047	140,617	137,369
Stallions[4]	6,097	6,519	1,107	1,188	877	1,001
Unbroken Horses — One year and above	189,986	187,582	33,637	32,268	34,767	35,250
Unbroken Horses — Under one year	84,107	80,508	19,898	19,562	13,088	13,153
Total	1,008,699	1,008,990	140,331	141,065	189,349	186,773
Other Horses	214,914	203,078	22,880	22,699	23,982	23,251
TOTAL OF HORSES	1,223,613	1,212,068	163,211	163,764	213,331	210,024
Cows and Heifers in milk	1,693,808	1,623,350	249,858	234,845	362,096	345,821
Cows in calf but not in milk	263,625	299,426	28,666	35,664	44,949	52,802
Heifers in calf	290,674	355,981	26,852	28,700	48,580	53,666
Bulls being used for service	75,969	929,435	13,009	71,334	19,113	218,833
Other Cattle:—Two years and above	985,861		92,242		229,446	
" " One year and under two	1,071,970	1,138,675	199,422	199,836	283,228	293,516
" " Under one year	1,007,555	1,077,336	195,028	205,903	242,225	245,204
TOTAL OF CATTLE	5,389,462	5,424,203	805,077	776,282	1,229,637	1,209,842
Ewes kept for Breeding	4,367,770	4,963,696	1,396,530	1,523,079	2,826,123	3,014,702
Rams to be used for service in 1919	108,155	2,529,520	48,592	631,197	79,603	1,067,255
Other Sheep:—Two years and above	2,779,276		632,021		1,067,603	
" " Under one year	4,644,348	5,490,320	1,147,621	1,337,363	2,436,710	2,796,241
TOTAL OF SHEEP	11,899,549	12,983,536	3,224,764	3,491,639	6,410,039	6,878,198
Sows kept for Breeding	225,748	262,371	25,004	27,169	15,084	16,082
Boars being used for service	16,069	1,279,182	2,513	128,344	1,672	111,925
Other Pigs	1,385,425		143,709		121,149	
TOTAL OF PIGS	1,627,242	1,541,553	171,226	155,513	137,905	128,007

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[1] Not including Mountain or Heath Land.

[2] The areas of Mixed Corn were apportioned in previous years among Wheat, Barley and Oats.

[3] Including Mares kept for Breeding.

[4] Above two years old, used, or intended to be used, for service.

[5] Furnished by the Board of Agriculture for Scotland.

[6] Furnished by the Department of Agriculture and Technical Instruction for Ireland.

[7] Figures for Ireland include Orchards.

Stock, *as returned on June* 4, 1919 *and* 1918, *in England, Wales*, (*including the Isle of Man and the Channel Islands*).

—	Great Britain		Ireland[6]		United Kingdom.	
	1919	1918	1919	1918	1919	1918
Total Area (excluding water)	Acres 56,207,247		Acres 20,247,300		Acres 76,640,000 [8]	
Total Acreage under Crops and Grass[1]	31,499,428	31,748,613	14,490,128	14,392,975	46,108,998	46,266,748
Arable Land	15,717,355	15,852,135	[11]	5,270,615	[13]	21,219,552
Permanent Grass[1]	15,782,073	15,896,478	[13]	9,122,360	[13]	25,047,196
Wheat	2,300,704	2,635,723	69,727	157,326	2,372,076	2,795,505
Barley or Bere	1,683,462	1 653,644	186,323	184,712	1,870,555	1,839,317
Oats	3,675,137	4,023,886	1,442,396	1,570,537	5,143,517	5,631,224
Mixed Corn[2]	144 074	145,591	—	—	144,108	145,621
Rye	112,333	107,082	5,230	8,947	117,731	116,233
Beans[9]	291,280	257,956	1,689	2,271	457,004	410,953
Peas	163,849	150,521				
Potatoes	629,972	803,329	588,595	701,847	1,229,570	1,518,091
Turnips and Swedes	1,409,849	1,307,507	273,331	294,795	1,690,862	1,609,956
Mangold	398,558	403,844	[12] 74,865	[12] 97,663	[12] 474,431	[12] 502,450
Cabbage	55,255	42,662	26,347	27,012	81,687	69,796
Hops	16,745	15,666	—	—	16,745	15,666
Small Fruit	64,803	72,060	[7] 19,797	[7] 18,503	[7] 84,839	[7] 90,849
Clover, Sainfoin, and Grasses under Rotation	3,661,569	3,449,517	[13]	2,031,120	[13]	5,520,796
Other Crops	452,430	369,600	117,378	166,882	573,224	538,971
Bare Fallow	657,335	413,547	—	—	657,885	414,124
	No.	No.	No.	No.	No.	No.
Horses used for Agricultural purposes[3]	954,815	959,797	407,748	413,617	1,368,592	1,379,486
Unbroken Horses (including stallions). One year and above	266,471	263,808	99,890	105,400	368,048	370,900
Unbroken Horses (including stallions). Under one year	117,093	113,223	60,331	51,893	178,298	165,961
TOTAL OF HORSES	1,338,379	1,336,828	567,960	570,910	1,914,933	1,916,347
Cows and Heifers in milk	2,305,762	2,204,016	1,471,240	1,481,291	4,129,209	4,087,762
Cows in calf but not in milk	337,240	387,892				
Heifers in calf	366,106	438,347	90,527	75,548	458,596	516,079
Bulls being used for service	108,091	1,219,602	38,783	40,007	147,316	2,289,684
Other Cattle:—						
Two years and above	1,307,549		1,047,807	1,026,565	2,358,359	
One year and under two	1,554,620	1,682,027	1,158,738	1,106,445	2,721,594	2,747,295
Under one year	1,444,808	1,528,443	1,222,355	1,133,426	2,676,358	2,670,829
TOTAL OF CATTLE	7,424,176	7,410,327	5,029,450	4,863,282	12,491,427	12,311,149
Ewes kept for Breeding	8,590,423	9,501,477	1,407,079	1,448,960	10,028,685	10,985,361
Rams to be used for service in 1919	236,350	4,227,972	45,161	45,941	282,323	4,905,964
Other Sheep:—						
One year and above	4,478,900		629,947	626,128	5,114,229	
Under one year	8,228,679	9,623,924	1,431,158	1,506,149	9,693,983	11,171,356
TOTAL OF SHEEP	21,534,352	23,353,373	3,513,345	3,627,178	25,119,220	27,062,681
Sows kept for Breeding	265,836	305,622	97,069	104,782	364,343	412,065
Boars being used for service	20,254	1,519,451	1,610	1,604	21,922	2,397,151
Other Pigs	1,650,283		879,284	807,999	2,538,828	
TOTAL OF PIGS	1,936,373	1,825,073	977,963	974,385	2,925,093	2,809,215

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[8] Figures for Jersey include Water.

[9] Figures for Scotland relate only to Beans harvested as corn.

[10] Figures for Scotland include Beans, Mashlum, &c., for Fodder.

[11] Kohl-Rabi is not separately distinguished in Scotland.

[12] Figures for Ireland include Beetroot.

[13] Figures for Ireland not available.

TABLE II.—Total Produce, Acreage, and Yield per Acre *of* 1919 *and* 1918, *with the Average*

Crops	Total Produce		Acreage		Yield per Acre		Average of the Ten Years
	1919	1918	1919	1918	1919	1918	1909-1918
WHEAT.	Qrs.	Qrs.	Acres.	Acres	Bush.	Bush.	Bush.
England	7,728,000	10,174,000	2,150,281	2,460,695	28·7	33·1	31·2
Wales	248,000	356,000	70,914	95,966	28·0	29·7	27·8
Scotland	383,000	402,000	79,509	79,062	38·5	40·6	39·8
GREAT BRITAIN . .	8,359,000	10,932,000	2,300,704	2,635,723	29·1	33·2	31·4
Ireland	306,000	711,000	69,663	157,326	35·1	36·2	36·0
UNITED KINGDOM .	8,665,000	11,643,000	2,370,367	2,793,049	29·2	33·3	31·6
BARLEY[2].							
England	5, 74,000	5,666,000	1,405,643	1,394,861	28·9	32·5	32·0
Wales	400,000	414,000	104,073	105,948	30·7	31·3	30·6
Scotland	764,000	677,000	173,746	152,835	35·2	35·4	35·3
GREAT BRITAIN . .	6,238,000	6,757,000	1,683,462	1,653,644	29·6	32·7	32·3
Ireland	975,000	1,003,000	186,625	184,712	41·8	43·4	43·1
UNITED KINGDOM. .	7,213,000	7,760,000	1,870,087	1,838,356	30·9	33·8	33·4
OATS.							
England	10,052,000	12,661,000	[6]2,251,558	[6]2,414,559	35·7	41·9	39·9
Wales	1,365,000	1,678,000	312,175	365,502	35·0	36·7	35·2
Scotland	5,305,000	6,457,000	1,110,811	1,243,823	38·2	41·5	39·2
GREAT BRITAIN . .	16,722,000	20,796,000	3,674,544	4,023,884	36·4	41·3	39·3
Ireland	8,773,000	10,400,000	1,442,458	1,579,537	48·7	52·7	51·2
UNITED KINGDOM .	25,495,000	31,198,000	5,117,002	5,603,421	39·9	44·5	42·6
BEANS.							
England	847,000	879,000	271,481	239,429	25·0	29·4	27·6
Wales	7,800	9,700	2,460	2,668	25·5	29·1	27·4
Scotland	32,800	33,200	6,654	7,275	39·4	36·5	36·8
GREAT BRITAIN . .	887,600	921,900	[4]280,595	[4]249,372	25·3	29·6	27·9
Ireland	[7]	9,400	[7]	1,850	[7]	40·9	42·9
UNITED KINGDOM. .	[7]	931,300	[7]	251,222	[7]	29·7	28·1
PEAS.							
England	440,000	437,000	131,718	127,147	26·7	27·5	24·8
Wales	1,400	1,900	531	710	21·7	21·6	22·4
Scotland	230	270	103	86	18·0	25·5	25·7
GREAT BRITAIN . .	441,630	439,170	[4]132,352	[4]127,943	26·7	27·5	24·8
Ireland	[7]	1,500	[7]	421	[7]	28·4	29·8
UNITED KINGDOM .	[7]	440,670	[7]	128,364	[7]	27·5	24·9

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[1] The particulars for Ireland have been furnished by the Department of Agriculture and Technical Instruction for Ireland, and those for Scotland, by the Board of Agriculture for Scotland. No Produce Statistics are collected for the Channel Islands and the Isle of Man.

[2] Including Bere.

[3] No Hops are grown in any other part of the United Kingdom.

[4] Exclusive of a certain area (amounting in 1919 to 10,685 acres of beans, and 31,497 acres of peas) the produce of which was cut or picked green.

each of the Principal Crops *in the* United Kingdom[1] *in* *of the Ten Years* 1909–1918.

Crops—*continued*	Total Produce		Acreage		Yield per Acre		Average of the Ten Years
	1919	1918	1919	1918	1919	1918	1909-1918
POTATOES.	Tons	Tons	Acres	Acres	Tons	Tons	Tons
England	2,571,000	3,987,000	446,341	596,607	5·8	6·7	6·3
Wales	162,000	222,000	29,035	37,225	5·6	6·0	5·6
Scotland	832,000	1,151,000	154,596	169,497	5·4	6·8	6·4
GREAT BRITAIN	3,565,000	5,360,000	629,072	803.329	5·7	6·7	6·3
Ireland	2,747,000	3,863,000	588,802	701,847	4·7	5·5	5·5
UNITED KINGDOM	6,312,000	9,223,000	1,218,774	1,505,176	5·2	6·1	5·9
TURNIPS AND SWEDES.							
England	10,423,000	11,233,000	[5]925,347	[5]856,946	11·3	13·1	12·9
Wales	760,000	785,000	57,819	52.302	13·1	15·0	15·3
Scotland	7,146,000	5,514,000	426,451	396,689	16·8	13·9	16·4
GREAT BRITAIN	18,329,000	17,532,000	1,409,617	1,305,937	13·0	13·4	14·0
Ireland	4,487.000	5,303,000	273,460	294.795	16·4	18·0	17·2
UNITED KINGDOM	22,816,000	22,835,000	1,683,077	1.600.732	13·6	14·3	14·5
MANGOLD.							
England	6,121,000	7,988.000	[6]382,837	[6]386,508	16·0	20·7	19·5
Wales	196,000	243,000	13,069	13,215	15·0	18·4	18·0
Scotland	43,000	49,000	2,507	2.552	17·0	19·2	19·7
GREAT BRITAIN	6,360,000	8,280,000	398,413	402,275	16·0	20·6	19·4
Ireland	1.432,000	2,041,000	74,839	97,663	19·1	20·9	20·0
UNITED KINGDOM	7,792,000	10,321,000	473,252	499,938	16·5	20·6	19·5
HAY *from* CLOVER, SAINFOIN, &c.					Cwt.	Cwt.	Cwt.
England	1,600,000	1,918,000	1,342,131	1,301,694	23·8	29·5	29·3
Wales	169.000	180,000	159,122	144,810	21·3	24·9	25·4
Scotland	521,000	594,000	394,246	389,472	26·4	30·5	31·3
GREAT BRITAIN	2,290,000	2.692,000	1,895,499	1,835.976	24·2	29·3	29·4
Ireland	[8]	1,701,000	[8]	967,437	[8]	35·2	36·8
UNITED KINGDOM	[8]	4,393,000	[8]	2,803,413	[8]	31·3	31·7
HAY *from* PERMANENT GRASS.							
England	3,028,000	4,222,000	3,694.597	3,812,485	16·4	22·1	22·6
Wales	389,000	466,000	475,912	486,013	16·3	19·2	19·8
Scotland	191,000	224,000	147,679	148,874	25·8	30·1	30·0
GREAT BRITAIN	3,608,000	4,912,000	4,318,188	4,447,372	16·7	22·1	22·6
Ireland	[8]	3,027,000	[8]	1,502.980	[8]	40·3	42·2
UNITED KINGDOM	[8]	7,939,000	[8]	5,950,352	[8]	26·7	27·3
HOPS.	Cwt.	Cwt.					
England[7]	194,000	130,000	16,745	15,666	11·6	8·3	9·6

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[5] Exclusive of a certain area (amounting in 1919 to 232 acres of turnips and swedes, and 145 acres of mangolds) on which the crops were grown for the production of seed.

[6] Exclusive of a certain area (amounting in 1919 to 593 acres) the produce of which was cut green.

[7] Figures for Ireland not available.

[8] Figures for Ireland are not available, but the total production of hay in Ireland is estimated at 4.810,000 tons from an estimated area of 2,520,096 acres.

TABLE III.—*Total Production of* Hops *in the Years* 1919 *and* 1918, *with the Acreage and Average Yield per Statute Acre, in each County of England in which Hops were grown* ; *with the Average of the Ten Years* 1909-1918.

COUNTIES.	Total produce		Acreage		Yield per acre		
	1919	1918	1919	1918	1919	1918	Average of the Ten years 1909-1918
	Cwt.	Cwt.	Acres	Acres	Cwt.	Cwt.	Cwt.
Kent East . . .	28,000	23,000	2,529	2,371	11·0	9·8	10·4
Kent Mid. . . .	45,000	35,000	3,652	3,336	12·4	10·4	11·1
Kent Weald . . .	52,000	35,000	4,378	4,032	11·8	8·6	10·3
Total, Kent	125,000	93,000	10,559	9,739	11·8	9·5	10·6
Hampshire . . .	7,200	6,000	757	717	9·5	8·3	9·8
Hereford . . .	28,000	14,000	2,415	2,331	11·5	6·1	7·0
Shropshire . . .	470	380	47	48	10·0	8·0	6·3
Surrey	1,500	960	181	193	8·2	5·0	7·7
Sussex East . .	14,500	6,700	1,361	1,260	10·7	5·3	9·3
Sussex West . .	600	370	53	50	11·3	7·5	
Worcester . . .	17,000	8,700	1,372	1,328	12·5	6·5	7·6
Total for England	194,000	130,000	16,745	15,666	11·6	8·3	9·6

TABLE IV.—*Average* Prices *of* British Corn *per Imperial Quarter in England and Wales, as ascertained under the Corn Returns Act*, 1882, *in each Week of the Year* 1919.

Week ended	Wheat		Barley		Oats		Week ended	Wheat		Barley		Oats	
	s.	d.	s.	d.	s.	d.		s.	d.	s.	d.	s.	d.
January 4 . .	72	2	62	3	48	8	July 5 . . .	73	4	62	4	49	0
January 11 . .	72	6	62	5	49	8	July 12 . . .	73	3	63	1	49	11
January 18 . .	72	7	62	3	50	0	July 19 . . .	73	4	62	9	49	11
January 25 . .	72	7	61	10	49	6	July 26 . . .	73	4	63	4	48	11
February 1 . .	72	8	62	4	49	7	August 2 . .	73	3	62	10	50	3
February 8 . .	72	7	62	3	49	2	August 9 . .	73	4	73	8	55	6
February 15. .	72	8	62	5	49	0	August 16 . .	73	3	75	2	61	4
February 22. .	72	8	62	6	49	4	August 23 . .	73	10	83	4	62	0
March 1 . .	72	7	62	7	48	8	August 30 . .	73	3	86	7	61	10
March 8 . .	72	6	62	7	48	6	September 6 .	73	4	89	3	61	1
March 15 . .	72	5	62	5	46	8	September 13 .	73	5	92	5	62	4
March 22 . .	72	7	62	1	46	4	September 20 .	73	4	94	7	61	3
March 29 . .	72	7	62	8	46	11	September 27 .	73	0	95	2	60	2
April 5. . .	72	6	62	8	47	2	October 4 . .	73	4	94	4	59	6
April 12. . .	73	0	62	9	47	1	October 11 . . .	73	1	95	5	58	10
April 19. . .	73	1	62	9	47	3	October 18 . . .	73	0	93	10	57	9
April 26. . .	73	1	62	9	48	1	October 25 . .	73	0	95	1	57	5
May 3 . . .	73	2	62	8	48	7	November 1 .	72	9	96	0	56	4
May 10 . . .	73	2	63	1	47	5	November 8 .	72	8	97	10	55	3
May 17 . . .	73	3	62	4	47	11	November 15 .	72	7	100	7	55	7
May 24. . .	73	2	62	7	47	11	November 22 .	72	7	104	11	55	11
May 31. . .	73	3	62	7	48	3	November 29 .	72	7	107	9	56	0
June 7. . .	73	2	62	6	47	10	December 6 .	72	7	108	11	55	10
June 14 . . .	73	3	62	8	48	11	December 13 .	72	6	105	2	56	9
June 21 . . .	73	3	62	8	48	7	December 20 .	72	6	103	6	56	3
June 28 . . .	73	3	63	4	49	1	December 27 .	72	6	105	10	57	2
							Average of year.	72	11	75	9	52	5

TABLE V.—*Average Annual Prices per Quarter and Total Quantities of* British Corn *returned as sold in the Towns in England and Wales making Returns under the Corn Returns Act*, 1882, *in the Years* 1914—1919.

Years	Wheat		Barley		Oats		Wheat	Barley	Oats
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	Qrs.	Qrs.	Qrs.
1914	34	11	27	2	20	11	3,027,976	3,403,072	1,164,361
1915	52	10	37	4	30	2	3,225,198	3,552,128	1,181,480
1916	58	5	53	6	33	5	3,600,391	2,182,218	1,129,096
1917	75	9	64	9	49	10	2,386,196	2,416,966	823,072
1918	72	10	59	0	49	4	2,484,210	1,870,761	4,483,313
1919	72	11	75	9	52	5	3,045,129	3,112,858	675,998

TABLE VI.—*Annual and Septennial Average Prices per Bushel of* British Corn *in the Years* 1914—1919, *with the Value of* £100 *of Tithe Rent-charge.*

Years	Annual average price						Septennial average price						Value of tithe rent-charge of £100					
	Wheat		Barley		Oats		Wheat		Barley		Oats		Calculated on annual average			Calculated on septennial average		
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
1914	4	4¼	3	4¾	2	7¼	4	2	3	4¼	2	4¾	80	16	8¼	77	1	4¼
1915	6	7¼	4	8	3	9¼	4	6½	3	6¾	2	7¼	116	7	2¼	83	2	6¾
1916	7	3½	6	8¼	4	2	4	11	4	0¼	2	10½	141	8	9½	92	1	0¼
1917	9	5½	8	1	6	2¾	5	8½	4	9¼	3	5½	188	9	7½	109	3	11
1918	9	1¼	7	4½	6	2	6	5¼	5	4	4	0	180	1	6½	109	3	11
1919	9	1¼	9	5½	6	6½	7	1½	6	1¾	4	6½		—		109	3	11[1]

[1] As fixed by the Tithe Act, 1918.

[Continued from page 233.]

There was scarcely any variation in the production of Turnips and Swedes, the decrease being only 19,000 tons on a total of 22,835,000 tons. The fact that the decrease in the production was so small was due to the considerable increase in the out-turn per acre in Scotland, which, with the aid of a small increase in acreage, raised the crop in that country from 5,514,000 tons to 7,146,000 tons. On the other hand, there were reductions of 835,000 tons in England and Wales and of 816,000 tons in Ireland, the balance being, therefore, slightly on the wrong side. It may be remembered that this crop was in 1918 at the lowest level reached for some years. Except in Scotland, as already mentioned, the yield per acre was lower than in 1918, the figure for the whole of the United Kingdom being 13·6 tons against an average of 14·5 tons, and the 1918 figure of 14·3 tons.

Mangolds, unlike turnips and swedes, decreased a great deal, the principal reasons being the very low yield in Great Britain and the shrinkage in the area in Ireland. The former cause

[Continued on page 242.]

TABLE VII.—*Monthly Average Prices of* Fat Stock *and* Milking Cows *in England and Wales during the Year* 1919.

(Compiled from the Return of Market Prices published weekly by the Ministry of Agriculture and Fisheries.)

DESCRIPTION.	Grade	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
		Per cwt. live weight												
FAT CATTLE:		*s. d.*	*s. d.*	*s. d*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
Polled Scots .	1	78 0	80 8	81 8	83 3	85 9	84 10	82 6	79 3	79 2	74 1	79 6	83 1	81 5
	2	73 0	75 0	76 3	78 0	80 5	80 0	78 0	74 2	74 0	74 2	74 4	77 3	76 3
Shorthorns .	1	77 6	79 10	80 9	82 11	85 1	84 11	82 0	78 7	78 8	78 8	79 1	82 5	80 10
	2	72 6	74 10	75 8	77 8	79 10	79 11	77 1	73 10	73 9	73 10	74 2	77 4	75 10
Herefords. .	1	77 7	80 2	81 4	83 6	85 8	85 2	82 3	78 7	79 0	78 7	79 3	82 5	81 1
	2	72 5	75 0	75 10	77 8	79 11	80 0	76 11	73 10	73 8	73 7	74 3	77 4	75 10
Devons . .	1	77 10	80 2	80 9	83 2	85 2	85 0	82 5	78 4	78 6	78 8	79 0	82 1	80 11
	2	72 10	75 2	75 7	77 9	80 0	80 0	77 4	73 5	73 10	73 8	74 1	77 1	75 11
FAT COWS .	1	72 8	74 9	75 9	77 10	79 11	79 11	77 1	73 9	73 9	73 9	74 1	77 4	75 11
	2	64 8	66 10	67 9	69 8	71 10	71 10	69 0	65 9	65 9	65 9	66 4	69 3	67 10
	Quality	Per head.												
MILKING COWS:		*£ s.*	*£ s.*	*£ s.*	*£ s.*	*£ s.*	*£ s.*	*£ s.*	*£ s.*	*£ s.*	*£ s.*	*£ s.*	*£ s.*	*£ s.*
Shorthorns—In Milk .	1	54 12	51 18	50 0	49 0	50 4	50 11	50 13	50 12	53 8	51 1	56 16	58 17	52 11
	2	41 10	38 14	36 15	36 10	37 10	37 4	37 7	36 15	39 11	40 17	42 18	44 2	39 3
Calvers . .	1	47 6	45 16	44 1	44 9	45 4	46 11	47 10	47 15	49 15	48 8	52 12	53 1	47 14
	2	37 10	34 11	33 10	33 15	35 6	35 9	36 10	36 2	37 15	37 15	39 0	39 13	38 8
		Per lb.												
		d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*
VEAL CALVES .	1	12¼	12½	12¼	11	10¾	20	16¼	10¾	10¾	14¾	16	17½	13¾
	2	10¾	11	10½	9¾	9½	17¼	13¾	9	9	12½	14	15	11¾
FAT SHEEP:														
Downs . .	1	16¾	17¼	17¾	18¼	18½	17½	16¾	15¾	16	16¼	16¾	18	17
	2	16¾	17¼	17¾	18¼	18½	17½	16¾	15¾	16	16¼	16¾	18	17
Longwools .	1	16¾	17½	17¾	18¼	18¾	18	16¾	15¾	16¼	16½	16¾	18¼	17¼
	2	16¾	17½	17¾	18¼	18¾	18	16¾	15¾	16¼	16½	16¾	18¼	17¼
Crossbreds .	1	16¾	17½	17¾	18¼	18½	17¾	16¾	15¾	16¼	16¼	16¾	18¼	17¼
	2	16¾	17½	17¾	18¼	18½	17¾	16¾	15¾	16¼	16½	16¾	18¼	17¼
		Per score live weight.												
FAT PIGS:		*s. d.*	*s. d.*	*s. d.*	*s. d*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
Bacon Pigs .	1	21 0	21 0	21 0	21 0	21 0	21 0	21 0	21 0	21 0	21 0	21 0	23 0	21 2
	2	21 0	21 0	21 0	21 0	21 0	21 0	21 0	21 0	21 0	21 0	21 0	23 0	21 2
Porkers . .	1	21 0	21 0	21 0	21 0	21 0	21 0	21 0	21 0	21 0	21 0	21 0	23 0	21 2
	2	21 0	21 0	21 0	21 0	21 0	21 0	21 0	21 0	21 0	21 0	21 0	23 0	21 2

TABLE VIII.—*Yearly Average Prices of* **Fat Stock** *and* **Milking Cows** *in England and Wales during the Years* 1910 *to* 1919.

(Compiled from the Weekly Return of Market Prices.)

DESCRIPTION.	Quality	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919
FAT CATTLE:		per stone *s. d.*	per stone *s. d.*	per stone *s. d.*	per stone *s. d*	per stone *s. d.*	per stone *s. d.*	per stone *s. d.*	per stone *s. d.*	per stone *s. d.*	per stone *s. d.*
Polled Scots .	1	8 9	8 5	9 3	9 3	9 4	11 10	13 11	18 3	16 8[1]	18 4[1]
	2	8 3	7 11	8 8	8 9	8 11	11 2	13 3	17 2		
Shorthorns .	1	8 7	8 2	9 0	9 0	9 2	11 9	13 8	17 9		
	2	7 9	7 5	8 1	8 3	8 5	10 9	12 6	16 3		
Herefords .	1	8 9	8 5	9 2	9 3	9 3	11 10	13 9	17 7		
	2	8 1	7 8	8 5	8 7	8 8	10 8	12 7	16 3		
Devons .	1	8 9	8 4	9 0	9 2	9 2	11 11	13 7	17 6		
	2	7 11	7 7	8 1	8 3	8 5	10 10	12 1	16 0		
MILKING COWS		per head *£ s.*	per head *£ s.*	per head *£ s.*	per head *£ s.*	per head *£ s.*	per head *£ s.*	per head *£ s.*	per head *£ s.*	per head *£ s.*	per head *£ s.*
Shorthorns—											
In Milk .	1	22 3	22 2	22 1	23 15	23 13	26 6	34 5	45 3	53 15	52 11
	2	18 9	18 7	18 8	19 15	19 15	21 14	27 10	35 14	41 16	39 3
Calvers .	1	21 11	21 11	21 18	22 16	22 9	24 18	32 19	42 2	48 17	47 14
	2	18 5	18 0	18 2	19 4	18 19	20 15	26 13	33 15	38 19	36 8
Other Breeds—											
In Milk .	1	19 12	19 2	19 2	20 16	21 0	24 4	31 8	44 6	48 14	[2]
	2	15 14	16 6	16 2	17 13	17 14	19 16	25 7	34 2	38 0	
Calvers .	1	16 1	14 12	16 9	16 9	17 4	19 0	24 1	29 9	34 10	
	2	12 19	12 17	13 6	14 13	15 8	17 13	21 15	26 17	30 12	
		per lb. *d.*	per lb. *d.*	per lb. *d.*	per lb. *d.*	per lb. *d.*	per lb. *d.*	per lb. *d.*	per lb. *d.*	per lb. *d.*	per lb. *d.*
VEAL CALVES .	1	8½	8½	8½	9½	9¼	10½	12¼	16	15¼	13¾
	2	7¾	7½	7½	8½	8½	9½	11	14¼	13½	11¾
FAT SHEEP:											
Downs .	1	8¼	7¾	8¾	9½	9¾	11	13¼	16½	15¾	17
	2	7¼	7	8	8½	8¾	10	12	15	15¾	17
Longwools .	1	7¾	7¼	8¼	9	9¼	10¼	12¼	15½	15¾	17¼
	2	6¾	6½	7½	8	8¼	9¼	11¼	14¼	15¾	17¼
Crossbreds .	1	8¼	7¾	8¾	9½	9¾	11	13¼	16½	16	17¼
	2	7½	7	7¾	8½	8¾	10	12	15	15¾	17¼
FAT PIGS:		per stone *s. d.*	per stone *s. d.*	per stone *s. d.*	per stone *s. d.*	per stone *s. d.*	per stone *s. d.*	per stone *s. d.*	per stone *s d.*	per stone *s. d.*	per stone *s. d.*
Bacon Pigs .	1	7 10	6 8	7 4	8 5	7 10	9 7	12 4	16 7	19 0[1]	19 9[1]
	2	7 5	6 2	6 10	7 11	7 4	9 0	11 7	15 9		
Porkers .	1	8 4	7 3	7 8	8 11	8 4	10 0	13 2	17 2		
	2	7 10	6 9	7 2	8 4	7 11	9 6	12 6	16 5		

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[1] Controlled price.
[2] Figures not available.

TABLE IX.—*Quantities and Values of* Imports *of the principal* Agricultural Commodities *into the United Kingdom in* 1918 *and* 1919, *with the average for the Years* 1911 *to* 1913.

Commodities.	Quantities.			Values.		
	Annual Average, 1911-13	1918	1919.	Annual Average, 1911-13	1918	1919
	Cwt.	Cwt.	Cwt.	£	£	£
GRAIN AND MEAL.						
Wheat	104,506,143	58,029,710	71,432,400	43,068,074	53,167.786	68,431,182
Wheat Meal and Flour	10,774,254	26,359,600	17,692,170	5,714,439	35,526 683	25,700,817
Barley	22,370,321	5,025,200	16,643,900	8,071,609	5,426,012	17,836,137
Oats	18,245,367	10,934,700	6,710.221	5,800,459	11,478,674	6,723,151
Oatmeal (including Groats and Rolled Oats)	845,693	2,908,429	1,375,019	602.913	4,842.330	2,319,703
Peas	2,249,705	2,180,495	1,136.351	1,103,733	5,405,696	2,583,069
Beans (other than Haricot)	1.275.416	438,511	730.975	471,456	641,802	875,150
Maize	43,878,207	14,751,177	16,860,900	12,692,064	13,930.356	13,722,033
Maize Meal	581,982	1,428,465	2,313,768	215,885	1,616,990	2,252,446
MEAT.						
Beef	8,879,065	9.579.470	9,127,484	15,964,027	52,589.567	52,054.265
Mutton	5,358,482	2,129.239	4,276,673	10,331,026	9,579,170	19,502,841
Pork (including Bacon and Hams)	6,340,225	12,143,676	10,254,553	19,781,848	104,198,189	90,756,540
Unenumerated (including Rabbits)	1,498,563	1,496,982	1,902,389	3,034,851	7,428.813	11,580,228
TOTAL DEAD MEAT	22,076,349	25,349,367	25,561,099	49,112,752	173,795,739	173,893,874
BUTTER	4,148,958	1,614,625	1,558,172	24,679,478	20,225,917	19,843,964
CHEESE	2,318,231	2,357,822	2,124,715	7,196,490	15,910,041	15,219,178
MILK, CONDENSED	1,209,964	2,584,757	3,183,920	2,141,134	12,516,300	15,922,244
	No. of Great Hundreds	No. of Great Hundreds	No. of Great Hundreds			
EGGS	19,907,633	2,656,415	5,644,395	8,620,894	4,621,629	8,613,326

[Continued from page 239.]

was responsible for a shortage of 1,920,000 tons and the latter for 609,000 tons, the total reduction representing 24½ per cent. of the previous year's crop. In England, where over three-fourths of the crop is produced, the yield fell from 20·7 tons per acre to 16·0 tons per acre, which is 3·5 tons below the the average. The total in the United Kingdom was 1,731,000 tons less than in 1914.

The yield per acre of **Hay**, both from rotation grasses and from permanent pasture, was very much under the average of the previous ten years, and in spite of a slight increase in the acreage of the former, a big reduction in the total crop occurred. Hay from rotation grasses was down by 329,000 tons (16 per cent.) in England and Wales, where the crop was 1,769,000 tons. Scottish production decreased by 73,000 tons, or 12 per cent. The result was a deficit of 402,000 tons in Great Britain on an acreage which had increased by 60,000 acres, the yield per acre being 24·2 cwt., as compared with 29·3 in 1918 and an average of 29·4. In the case of hay from permanent grass the deficiency in Great Britain was 1,304,000 tons (a decrease of 27 per cent.). In England the yield per acre was only 16·4 cwt. as against 22·1 in the previous year and the 10 years' average of 22·6. In Scotland the fall in the yield was scarcely less than in England, while in Wales it was 2·9 cwts. No figures are available in respect of Ireland, but, as will be seen from a footnote to Table II, the crop of hay from both sources in that country is estimated at 4,810,000 tons as against the actual crop last year of 4,728,000 tons, whilst the acreage is estimated at 2,520,096 acres, which is 49,679 acres more than the actual acreage of 1918.

Taking these estimated figures as correct the total production of hay in the United Kingdom comes out at 10,708,000 tons against 12,332,000 tons in 1918, a reduction of 1,624,000 tons, or 13 per cent.

Although the crop of **Hops** (Table II.) showed an increase of 49 per cent. on the previous year it was still 27,000 cwt. short of 1917, and was less than half of the 1914 crop. The big increase over 1918 was due largely to the greater yield per acre, which was 11·6 cwt. as compared with 8·3 in 1918 and the average for the previous 10 years of 9·6. It was not, however, so high as either in 1917 or 1914. The proportion of the total crop grown in Kent was 64 per cent., the yield in that county being 11·8 cwt. to the acre, an increase of 2·3 cwt. over 1918. The highest yield in any district was 12·5 cwt. in Worcestershire, followed by 12·4 cwt. in Mid-Kent.

PRICES IN ENGLAND AND WALES.

The uniformity in the price of **Wheat** throughout the year (Table IV.) is, of course, a result of the control which the Ministry of Food continued to exercise. The price per imperial quarter varied only between the limits of 72*s.* 2*d.* and 73*s.* 10*d.*, the resultant average for the year being 72*s.* 11*d.* or one penny more than in 1918. As compared with 1914 there was a rise of 38*s.* or approximately 110 per cent. On the other hand, **Barley**, which was decontrolled in August, varied very considerably in price. Opening at 62*s.* 3*d.* per quarter it remained practically constant until the second week in August when the removal of the control permitted an immediate rise to 73*s.* 8*d.* By the end of August 86*s.* 7*d.* was reached, and a month later 95*s.* 2*d.* The increase was then arrested, and 100*s.* was not recorded until the middle of November. The maximum price was 108*s.* 11*d.* at the beginning of December, the closing price being 105*s.* 10*d.* This was 43*s.* 7*d.* above the opening price, the maximum range during the year being 47*s.* The average of 75*s.* 9*d.* was 16*s.* 9*d.* above that of the previous year, 11*s.* above the previous record (1917), and 48*s.* 7*d.* above the pre-war figure.

Oats opened at 48*s.* 8*d.* (3*s.* 3*d.* higher than the previous year), and after a slight rise, which persisted for some weeks, fell to the minimum for the year of 46*s.* 4*d.* towards the end of April. A fairly consistent increase then took place, and in August and September 62*s.* was reached. Another drop to 55*s.* 3*d.* was followed by a further rally which resulted in the closing price being 57*s.* 2*d.* The average for the year was 52*s.* 5*d.* as against 49*s.* 4*d.* in 1918, the increase since 1914 being 31*s.* 6*d.*

The septennial average prices of corn have again risen, and if the value of **tithe rent-charge** were calculated on these prices as formerly it would now stand much higher than it actually does under the Tithe Rent Act of 1918. It will be recalled that this Act has fixed the value at 109*l.* 3*s.* 11*d.* per 100*l.* nominal tithe rent, and that no variation will take place until 1926.

The prices of **Live Stock** have also remained under control, and consequently the variations from month to month are slight and of little interest. In the case of **Fat Cattle** the average price per stone dead weight was 18*s.* 4*d.*, and the resultant average prices per cwt. live weight vary, in the case of first grade beasts between 75*s.* 11*d.* (fat cows) and 81*s.* 5*d.* (Polled Scots), second grade animals fetching generally 5*s.* per cwt. less than first grade. The lowest prices were realised in January and the highest in May and June. The average controlled price of 18*s.* 4*d.* per stone was 1*s.* 8*d.* above that for the previous year and approximately double the figure realised by first grade beasts in 1914.

In the case of **Milking Cows** no figures are available for 1919 except for Shorthorns. The price per head of first quality cows in milk was 54*l.* 12*s.* in January, dropping to 49*l.* in April and rising to 58*l.* 17*s.* by the end of the year, the average being 52*l.* 11*s.* Second quality cows averaged 13*l.* 8*s.* less than this figure. First quality calvers opened at 47*l.* 6*s.*, fell to 44*l.* 1*s.* in March, and then rose steadily to 53*l.* 1*s.* in December, the average for the year being 47*l.* 14*s.*, which was 11*l.* 6*s.* above the second quality. As compared with last year there is a decrease of 24*s.* in the case of first quality animals, and of about 52*s.* in the case of second quality beasts. Second quality animals fetched about double the price realised by the corresponding grade in 1914 and first quality somewhat more than double.

Veal Calves opened at about 12¼*d.* per lb. (first quality) and 10¾*d.* (second quality), rising abruptly to 20*d.* (first quality) in June. The price then declined to 10¾*d.* in August and September, but increased again to 17½*d.* by December; the average for the year was 13¾*d.* in the case of first quality and 2*d.* less for the second quality. This was lower than for the two previous years, but 4½*d.* higher than in 1914.

The control of **Fat Sheep** has practically wiped out all variations in the price of the various breeds and grades. The January price of 16¾*d.* per lb. was soon improved upon, and in May Longwools fetched 18¾*d.* per lb. and other breeds ¼*d.* less. In August the lowest price for the year (15¾*d.*) was recorded, and by December 18*d.* had again been reached. The average for the year was 17¼*d.* except in the case of Downs, where it was 17*d.* This is 1¼*d.* to 1½*d.* more than in 1918, and is in fact the highest recorded.

The fixed price of **Fat Pigs** continued to be 21*s.* per score (live weight) until December when an increase of 2*s.* was permitted, the resultant average for the year being therefore 21*s.* 2*d.* This is equivalent to 19*s.* 9*d.* per stone dead weight, as against 19*s.* in 1918. It may be recalled that immediately before the war prices ranged from 7*s.* 4*d.* to 8*s.* 4*d.* per stone, and that before control was exercised they had risen to approximately 16*s.* 6*d.*

The clip of **Wool** was not, as in 1917 and 1918, commandeered by the Government. No figures are available as to the quantity produced, but the average price realised was 2*s.* 11¾*d.* per lb., as against 1*s.* 8¼*d.* in 1918. The increase per cent. over the pre-war price is therefore 180.

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NOTES, COMMUNICATIONS, AND REVIEWS.

The National Institute of Agricultural Botany.—Amongst the recommendations of Lord Selborne's Committee on agricultural policy is a plea for what may be called the after-care of agricultural problems which have been illuminated by research. In paragraph 164 of the report the Committee refers to the evidence which Professor Biffen laid before them as to the wonderful results obtained by plant breeding, and they go on to say :—"Not only is it necessary to extend such work on the actual production of new varieties *but an organisation* *must be built up for the proper distribution to the farmer of the new varieties* originated by research. The scale of the organisation at Cambridge is still far behind that of the plant breeding station at Svalof, in Sweden. With a little more time and with access to the necessary funds for growth, it is certain that results will be obtained remunerative in themselves and of the utmost financial value to the industry as a whole."

This will be recognised as sound common sense, and it is hoped that the National Institute of Agricultural Botany will give effective form to this policy. The establishment of the Institute, however, did not arise as a result of the Selborne report, which indeed was not published until after the scheme for the English Svalof had been sketched, nor, at the time when the scheme was taking shape in my mind had I heard of the British Seed Corn Association, Limited, which was registered in March, 1914, "with the object of distributing seed corn of improved varieties and races of distinct origin and pedigree direct from the original growers of the same." This Society, which by its rules limited payment of interest on its capital to 5 per cent. was promoted by the Hon. Edward Strutt, Professor Wood, Professor Biffen, Mr. Beaven, Mr. Hasler and others, but owing to the War following quickly on its formation, its work did not proceed far. When the scheme of the Institute was formulated on somewhat wider lines, the promoters, with characteristic generosity, transferred to the new comer their valuable experience and help. In point of fact, however, the germ of the Institute was found, not inappropriately, in the new Official Seed Testing Station for England and Wales established at the Food Production Department in November, 1917. That the Svalof idea was already stirring then is shown by the observation of Lord Ernle, then President of the Board of Agriculture, who said, when formally opening the Station ;—"I believe it has in it a seed which will grow and will prove of inestimable value to the agriculture of the future, and that we shall have in time to come an Institute of Applied Botany which will be of great assistance to our agricultural brethren."

The main difficulty which confronted the organiser of the Institute was the special character of the seed industry in Great Britain, which differentiated it entirely from conditions in Sweden, where the Svalof undertaking was established some thirty years ago. The British seedsman has deserved well of agriculture by developing new and improved varieties on commercial lines which yet owe a good deal to the scientific spirit. Svalof represents a dual organisation, half purely scientific and half purely commercial, which would have suited ill our own conditions. The visitor to Svalof observes that side by side, working together in perfect harmony, there are a scientific institute, supported in the main by Government grants, and a commercial undertaking farming on a very large scale and selling seed direct to the farmer in competition with other seedsmen. That the General Swedish Seed Company recognises its obligation to its scientific neighbour is clear from the fact that it contributes to the Institute's funds a considerable proportion of its profits, but it remains a commercial concern with shareholders to be considered and trade competitors to be faced.

It was felt impossible, however, to set up a parallel organisation in this country. The Plant Breeding Institute connected with the School of Agriculture of the University of Cambridge and directed with such insight and skill by Professor Biffen, works, like Dr. Nilsson's Institute at Svalof, on purely scientific problems, and has hitherto distributed its products in a rather haphazard way for lack of a suitable organisation. Incidentally, such financial profits as might reasonably have accrued on the distribution of such notable new varieties as "Little Joss" and "Yeoman" went into private rather than public pockets. It is hoped that the natural development of the Plant Breeding Institute, fostered, as we may hope, by more generous Government grants, will result in the steadily increased output of new varieties. These need some mechanism for their distribution. Any proposal to hand over the products of a State supported Institute to a purely commercial organisation which would make them an occasion for private profit, would cause a not unjustifiable outcry, even if the Swedish precedent were followed and some part of the profit were returned to meet the expenditure of further research.

'As with farm animals, so with our best breeds of farm plants it is true to say that in the past most of these and even the best systems of plant breeding have owed their origin to the unassisted efforts by amateurs, of whom Le Couteur, Patrick Sheriff and Hallett amongst many others are examples, not to mention Gregor Mendel himself. The Institute will, therefore, in every possible way encourage similar efforts. It will do so by affording in the first instance opportunity for exhaustive testing, and later by distributing such new productions as prove to be improvements, in some essential characters, on existing varieties.

The terms and conditions on which small stocks raised by plant breeders may be accepted have still to be settled by the Council of the Institute, but they will be such as to afford distinct inducements to research on scientific lines.

It seems obvious that the need existed for some new type of organisation which would distribute new varieties to the farmer after exhaustive trials had been made, employing any profits made by the undertaking on further work of the same kind. On the other hand, it seemed most desirable to enlist the sympathies and active co-operation of the seed trade. The constitution of the National Institute of Agricultural Botany was designed to meet the situation, and I hope and believe that it has done so successfully.

Shortly after the opening of the English Seed Testing Station a memorandum on the new proposals was written by myself and supported by letters from the then President of the Board, Lord Ernle, and from Lord Selborne, and by additional memoranda from the pens of Sir Daniel Hall, Mr. A. B. Bruce, Professor Bryner Jones and Mr. Martin H. F. Sutton. It was then circulated to the members of the Agricultural Seed Trade Association, the National Association of Corn and Agricultural Merchants and the Association of British and Irish Millers. Meetings of these bodies were addressed and their members were invited to contribute to the Trust Fund of the proposed Institute on the understanding that they would be represented on the governing body. I was happily able to encourage their generosity by saying that I had secured from friends, not connected with agriculture but concerned for its prosperity, initial subscriptions amounting to 16,000*l.* in cash, followed not long after by Mr. Fred Hiam's gift of a 350-acre farm at St. Ives, Huntingdonshire, to be used as the first seed-growing farm of the Institute. The three trade associations answered the appeal nobly, subscribing altogether about 23,000*l.* It happened, therefore, that before the adoption of the Trust Deed in January, 1918, I had secured in money and land subscriptions amounting to about 48,000*l.*, and, what was also most encouraging, the provisional assent of the Treasury to a recommendation of the Development Commissioners that a similar sum should be provided from the Development Fund.

The Institute is therefore entitled to claim that it is a semi-official body of a new type, which owes its being, and will owe driving power hereafter, to a combination of many interests and many types of benefactors. This collaboration is represented in the composition of the Council which governs the Institute's affairs. Three members were nominated by the first donors to the Trust Fund, two by the Ministry of Agriculture, two by the University of Cambridge, one by the University of Oxford, two by the Agricultural Seed Trade Association, one each by the Corn Merchants' and Millers' Associations, one by the Royal Agricultural Society of England, and Mr. Fred Hiam was co-opted by the Council.

It may be noticed that no appeal to take part in this work, which is for the benefit of agriculturists at large, has yet been made either to the Members of the Royal Agricultural Society, or to the landowning or farming community in general, but I trust it will not be supposed that the Institute does not need their help. This kindly reticence has been adopted advisedly, in the belief that those who are interested in the end product of the Institute's activities will be the more willing to give generous assistance when its preliminary organisation has been completed, and it is able to show more completely what are its policy and prospects.

When the Institute's activities are developed, about 2,000 acres of first rate arable land will be required to "grow on" its new and re-selected stocks.

Seed-growing demands the highest type of farming, and should be done on land used solely or mainly for that purpose. The scope of the Institute's work, covering as it does cereals, roots, potatoes and grasses, ensures that farms reserved for seed growing can be used throughout the rotation observed in any district.

To have the seed "grown on" on rented land, or by contract on ordinary arable farms, will increase the labour and expense of inspection, and the desired perfection of purity in the stocks would sometimes be in doubt. The Council of the Institute is, therefore, anxious to secure the gift of from four to six farms in different parts of the country, with different soils, climates and altitudes. As already stated, one admirably equipped farm has already been given to the Institute. It is situated in Huntingdonshire, and the land is specially suited to cereals. It is hoped that other gifts may provide the Institute with land adapted especially to grass and root seed and potato crops.

It is not essential that any blocks of land similarly given should be equipped with buildings, but it is most desirable that in all cases there should be close access to a railway or port.

One landowner very kindly offered to give a lease of a farm of 250 acres for twenty-one years at a peppercorn rent, and he was further ready to repay the Institute, at the end of the term, for any improvements, even though they were buildings of a special kind required for seed farming, but not very useful for ordinary farming. It was a great disappointment to the Institute that after careful inspection this gift could not be accepted. The land was good farming land but too heavy for seed growing. It is, however, hoped that other landowners may be found willing to provide land suitable for seed growing and on similar terms.

I need not here enlarge on the immense importance to agriculture of a steady improvement in the quality and yield of all the plants of the farm. Mr. Beaven's article on "Pedigree Seed Corn" in Vol. 70 of this *Journal* discusses the question with a knowledge to which I do not pretend, and I need only remind my readers of that thoughtful contribution by a great expert. I may, however, note that the total seed corn used in Great Britain is something over two million quarters per annum, and the possible increase in produce apart from improvement in quality which might easily accrue from the universal use of the varieties best suited to the conditions, may be reckoned in terms of millions of pounds per annum. It is improbable that the Institute would ever contemplate raising more than a few thousand quarters of cereal seed for distribution in any year. The further multiplication of its stocks would bring profit in the first instance to the traders in seed corn and in the intermediate stages to those farmers who have established reputations amongst their neighbours as men who "grow on" the stocks which they obtain through the trade. In the long run, however, it is the corn farming community as a whole who will derive the greater part of the benefit because there is no more economical method of increasing returns per acre than that which accrues from improving the hereditary characters of the plant itself.

It would appear that for many years to come the activities of Professor Biffen and the Plant Breeding Institute at Cambridge will provide for the new Institute a continual succession of new varieties of wheat and other cereals. The fact that Mr. E. S. Beaven is a member of the Council, and very active in promoting its success in the capacity of Chairman of the Cereals Committee, is evidence enough that the development of barley will be kept well to the forefront, and the Institute also hopes for successes with oats. In the more difficult fields of grasses and clovers much is expected from the setting up of a professorship of agricultural botany at Aberystwyth, the first holder of which is Professor Stapledon, whose researches into forage plants are already producing important results. Professor Stapledon was the first Director of the Official Seed Testing Station for England and Wales, and, while his surrender of that work has been much regretted, he established its methods on very sound lines, and every one will recognise that the research work on grasses which he has carried out at Aberystwyth is of even greater importance. The Institute will hope therefore to be handling new and improved varieties which come from Aberystwyth.

It is, however, with potatoes that the need for new and improved varieties seems to be most urgent. The spread of Wart Disease from a few more or less isolated areas, chief of which were parts of Lancashire and South Wales, has made it necessary for the Ministry of Agriculture to adopt a somewhat drastic policy of scheduling, as infected with this disastrous disease, many areas which only three years ago were regarded as perfectly clean. In such areas growers are compelled to adopt the only known preventive of the disease, namely, the planting of none but immune varieties. At present the choice of these is altogether insufficient, particularly in respect of first early varieties. During the last seven years the Board of Agriculture have conducted at Ormskirk, Lancashire, under the supervision of Mr. John Snell, annual trials of varieties of potatoes with a view to ascertaining whether they are immune to the disease and if so, but on an inadequate scale, what are their cropping and table qualities. It has been arranged that the new Institute shall be closely associated with this work and shall carry on its logical development, namely, the "growing on" and distribution of promising new varieties. To this end the Institute has purchased a small farm at Ormskirk on which the annual trials will henceforward be held.

The importance of this branch of the Institute's activities can be simply stated. The introduction of a new immune second early or maincrop variety, with a cooking quality equal to that of the best susceptible varieties, and with a yield exceeding that of existing immune varieties by a ton an acre, would represent an increase in the annual value of the potato crop in Glamorgan and Lancashire alone of more than 60,000*l.* I confess to some astonishment that the potato growing industry, which represents not only a vast amount of capital, but also a class of intensive farming which gives opportunities of perhaps greater profit than any other, should be adopting a somewhat indifferent attitude with regard to Wart Disease and all that it involves. The great potato growing areas of Cambridgeshire, Lincolnshire and Yorkshire have apparently regarded Wart Disease as a misfortune very inconvenient for Lancashire but one that would not affect their own prosperity. These long favoured districts, however, are now being attacked, and although the disease spreads slowly in a field, its presence even in very small areas scattered over a district may soon drive the Ministry of Agriculture to schedule the whole district, including, it may be, large acreages of clean land. I do not think it is taking too pessimistic a view to suggest the possibility of the majority of the areas in England and Wales usually devoted to potato growing on a large scale, if not, indeed, the whole country, being scheduled as infected during the next ten or fifteen years. That means simply that we shall have to replace every susceptible variety of potato, early or late, and whatever its special table qualities, with another variety which shall be immune to Wart Disease. It is a task which demands the exercise of the plant breeder's art *in excelsis* and provides for the new Institute a task of considerable magnitude.

Finally, the position of the Institute at the moment is as follows:—The Treasury have approved the issue to the Institute of grants and loans which, with the donations already received, will provide the Institute with a total capital of something over 90,000*l.*, of which about one-third is forthwith to be spent on providing at Cambridge the Official Seed Testing Station. The remaining two-thirds are available for accommodation and equipment for the general activities of the Institute in seed trials and the distribution of new and improved varieties.

The Seed Testing Station and the general administrative offices of the Institute are to be built on a site of about 35 acres (now in hand) on the Huntingdon Road, Cambridge, opposite University Farm. Houghton Hill Farm, St. Ives, the freehold property of the Institute, is in hand, and the harvest of 1920 will yield crops of new varieties from the Plant Breeding Institute, which, however, it has been decided to hold and not to distribute. The Institute has acquired a farm of about 43 acres at Ormskirk, and it is proposed forthwith to re-model the existing farmhouse, to provide a suitable laboratory and to build a superintendent's house. The land will be used for the Ormskirk Potato Trials and for growing on new varieties of immune potatoes.

With regard to the general administration of the Institute's work, this has so far been carried on by Committees of the Council, but it is proposed at an early date to appoint a Director, and it is hoped to secure for the post a man combining scientific, agricultural, administrative and commercial skill.

It may fairly be said that the idea of the Institute was met with goodwill by all the interests concerned, and that it has been generously supported financially and in every other way, but it has only made a beginning. I look confidently to a future of usefulness and definite achievement in the improvement of agricultural seed for the benefit of agriculture at large and of the seed industry. It is, however, reasonable to plead for patience and goodwill from the Institute's supporters. It is obvious that in so slow a process as the development and distribution of new varieties no sensational results are to be looked for. Success will only come with slow and devoted work, and with continued support from everybody who will benefit by a general improvement in the plants of the farm.

LAWRENCE WEAVER.

Agricultural Education in Yorkshire.—The geographical county of Yorkshire is considered to be of sufficient size to be regarded by the Ministry of Agriculture as a "Province" for administration purposes. The existing machinery for adding to the productiveness of the soil in the county has expanded so fruitfully that most Ministers of Agriculture have referred to the Yorkshire Council for Agricultural Education as setting an example which might well be followed with advantage in other parts of the country where circumstances permit. This Yorkshire Council, which recently attained its majority, is composed of 36 members—12 for each of the three divisions of the county—and 18 added members representing the Ministry of Agriculture, the Council of the University of Leeds, several ladies selected on account of their special experience and aptitude, and other persons. This Joint Council also acts as the Agricultural Committee of the University; it is recognised by the Ministry of Agriculture as an Advisory Council for Yorkshire; and, further, it is the Provincial Council for the Live Stock Scheme of the Ministry.

Right through these 21 years of progress that was only interrupted by the War, this Joint Council has been teaching Yorkshire landowners, farmers, and labourers how to co-operate and play into one another's hands with the sole object of wringing more and still more produce out of the soil of this "County of Broad Acres." The soil, the methods of farming, the ideas of stock breeding pursuits and other conditions greatly differ in the three Ridings; but during the entire years of its existence this Council for governing agricultural affairs in the premier English county has afforded an example to all neighbouring authorities and to the rest of England of the most effectively cordial co-operation. The three County Councils delegate to the joint body full powers with reference to agricultural education, and they make contributions on an agreed basis to cover the Council's expenditure, which includes that of the University Agricultural Department. Need it be said that this Agricultural Parliament, created and working so wisely, prevents all overlapping, and enables the Council to carry on a work which elicits the admiration of all comers, including many foreign agricultural visitors? This result would have been quite impossible in the case of any one County Council or the University acting independently.

Of course this Yorkshire Council of Agricultural Education, concentrated as its efforts of necessity are, is very much alive to all that is passing in the world of agriculture, and is full of hope and faith as to what the reconstruction of the Ministry of Agriculture and the two million grant may achieve. They take reconstruction for themselves to mean a revision of old and the planning of new work, and, as applied to agricultural education and research, to stand for the building up of a new system of specialised education upon the foundation which has been prepared in the last two decades, although the construction ought now to be on a bolder and more comprehensive scale than might have been contemplated before the War. How the systematic teaching of science bearing on agriculture began with the County Councils, under the powers of the Technical Instruction Act, 1889, the funds being derived from the "whiskey money," we all know. In 1890-91 the Yorkshire College, which developed into the Leeds University, appointed a Professor of Agriculture, with three lecturers, and their work chiefly took the form of extension lectures and veterinary science. To in-college instructions, travelling and dairy classes and schools were added, but the prejudice of farmers was too deeply rooted to be overcome without practical demonstrations on farms. The majority of farmers then lacked, as many of their class still lack, sufficient technical scientific education to convince them of its value. This desideratum awoke Yorkshire to a sense of its responsibility, and the outcome was the setting up of the Yorkshire Council, the leasing of the Manor Farm at Garforth, and the erection there of education buildings, including a lecture hall, classrooms, and laboratories, with a permanent dairy school.

It should be mentioned that before the period under review the larger farms of Yorkshire were in a way schools, in which it was quite common for the best labourer to become a farm foreman, and, in course of time, for the foreman to get a farm of his own. Many well-established farmers, too, received young men of position as pupils. In the ten years before the War the courses for students at the University were carefully adapted to meet the requirements of the sons of farmers. On the old Scottish University plan, young men of fair education studied at the University from October to March for one, two, or three years, going back to help on their fathers' farms each summer. Thus, many of them secured national diplomas in agriculture, and a few obtained science degrees.

The lecturing work throughout the county was continuously successful, and was made more elastic. The staff was strengthened year by year, and the numerous new subjects taken up included farriery, horticulture, and poultry keeping. Nearly every year brought some new development, and the University staff was continually strengthened by specialists in agricultural botany, seed testing, entomological work, insect pests, and research work in both domains. Additional agricultural chemists were appointed, whose services were in great demand for local investigations all over the county. Further developments included manurial trials, experiments in the cross-breeding of sheep, the feeding of bullocks, the rearing of calves on milk substitutes, and the feeding of pigs and poultry. Thanks to a grant from the Board of Agriculture, special research concerning the physiological problems connected with animal nutrition was started, and a year's investigations into milk contamination were most useful.

By 1913 it became abundantly clear that the ever-extending work carried on by the Department at the University had outgrown the rooms allotted to it. Additional neighbouring premises were chartered as a makeshift till a new block of buildings worthy of housing the agricultural headquarters of all Yorkshire could be provided. An anonymous admirer of the work being done started the fund with 10,000*l.*; the Board of Agriculture induced the Development Fund Authorities to promise a like sum; a site at the University was selected; plans were prepared, and building was about to start, when the War stopped everything for a time. One of the many proposals held up was for placing four men of the standing of University lecturers at select centres of the county, to be in direct touch with the University and with all educational activities in their neighbourhoods. Professor Seton, the head of the entire Department, was appointed by the Food Production Department as one of their Commissioners for Yorkshire; Dr. Crowther, the Professor of Agricultural Chemistry, was called up to the Advisory Staff in London; and the Department turned all the rest of its staff, and over a hundred men besides, on to food production for the War, all ordinary work being modified or laid aside.

No sooner was the Armistice signed than the Joint Council resolved to extend widely all facilities for agricultural education; that research and experimental work should assume far greater importance; and that close touch must be kept with the economic developments of practical farming. The idea of placing residential representatives at various centres of the county is to be adopted, each representative keeping in touch with all local agricultural activities and the University, and with any specialised work in connection with secondary or continuation schools. The lecturing and advisory work is to be brought up-to-date; and the prominence which small culture received during the War will take permanent shape and be expanded. War-time peripatetic teaching of cheese-making will be continued on a scale which should find abundant work for women acting as feeders for dairy schools and colleges, and popularise competent dairy work generally. The important veterinary and farriery work done throughout the Northern Command in the War by members of the staff has been diverted back, full of new vigour, to increased care for the welfare of horses, especially in the matter of shoeing, which has attained the position of an advanced science in Yorkshire. The disease which has thinned the ranks of honey gathering bees throughout the country almost to the vanishing point is said to now be threatening fruit culture, as a result of imperfect fertilisation of fruit blossom in the absence of bees. The Joint Council are having compiled a register of bee-keepers in the County, in the hope of giving bees and their keepers a new lease of life.

The five years' experimental Scheme of the Board of Agriculture for the Improvement of Live Stock by grants for heavy horses, bulls, and boars, and for encouraging milk recording societies, had expired, but has now been revived. The Live Stock Officer for Yorkshire held his appointment from the Joint Council and was attached to the University's staff, though the Board of Agriculture paid his salary and expenses. That this officer has now been taken over by the Ministry of Agriculture is a matter of regret amongst all concerned. The Council consider live stock supervision to be educational work coming within their purview, and the intimate association of the officer with the University staff has worked advantageously all round.

Engineering Research, Soil and Cropping Surveys, and Wool Production.—What should prove to be one of the most useful and up-to-date of the new departures is a proposal for a Research Department to deal with Agricultural Engineering. Labouring men are now so few and precious, and their wages so high, that wherever machinery can lessen their work at reasonable cost it is likely to be increasingly requisitioned. Without war tractor ploughing and cultivation, how could the British farmer have turned so many millions of acres from grass to arable? Agricultural engineers have to devote so much of their energy to the commercial production of standardised types of machinery that they cannot undertake much just now in the way of developing types new in principle and construction. So it is rightly thought that Leeds, with its great facilities for engineering work of all kinds, especially for the farm, should be one of the best possible centres for this venture. Negotiations on the subject are proceeding with the Ministry of Agriculture, and more will soon be heard of it. Anyway, the research scheme apart, agricultural engineering is to receive increased attention as a teaching subject. A coincidence worth mentioning is that Professor Seton is a member of the recently appointed Ministry of Agriculture's Departmental Committee on Agricultural Machinery, which is about to set to work. The amplified knowledge which this eminent expert in everything connected with farming will acquire in his new position cannot fail to be of great use in his

Yorkshire sphere of work. Some of the latest labour saving machinery has already found a place on the University farm.

Proposals have been submitted to the Ministry of Agriculture for a systematic soil survey of Yorkshire. The idea is to investigate not only the chemical, physical and mineralogical character of the soils, but also of the natural vegetation and the systems of agriculture and cropping which have been followed on the various classes of soil. Another new point receiving attention is that of proposed joint action between the Textile Department of the University and the Agricultural Department, with the object of investigating the conditions affecting the production of wool of particular qualities. While the farm centre should, under the University, be a place for primary investigation and experiments, the Council evidently hope to do more in the way of obtaining facilities on representative farms for the administration, on commercial lines, of experimental results obtained at the farm centre or in other parts of the country. There is room for considerable development in typical districts for testing side by side new varieties of corn, and possibly other crops. It is thought that organised courses of instruction in practical poultry keeping, with experiments and investigation, ought to be established, and the Council is of opinion that organised inspection in Horticulture for students other than teachers should be set up at suitable centres, with the object of turning out highly qualified practical gardeners.

It seems probable that the tenancy by the Council of the Manor Farm at Garforth, which is about eight miles from Leeds, may be allowed to run the lease out a few years hence. Whether possession of this estate will be retained afterwards as a permanent farm centre seems likely to depend on whether, in the next few years, some more likely centre for the growing needs of the Council and the University may be available. In any case the continuance of a central dairy school, going farther in the direction of cheese making, may be taken for granted. Essential as the projected new home for the Joint Council's work at the University is, its creation may have to be deferred a little, as the amount that would have sufficed to build it before the war would not be nearly sufficient now. In the meantime, the Council attach greater importance to a strong staff of men of the highest qualifications than to buildings for them to work in; so they welcome the announcement that the Ministry of Agriculture proposes to simplify the system on which its grants are to be given in future. Instead of an intricate calculation about such matters as the expenditure on other branches of education in any particular county, the Ministry proposes to contribute a definite percentage of approved expenditure. The Council cannot yet say what additional

Government aid they may expect under the new conditions, but they naturally hope it will be substantial enough to allow them to go forward in all directions with work that seems to them to be highly necessary at this time.

W. LEIGHTON.

Cattle and the Future of Beef Production in England. K. J. J. Mackenzie, M.A., Cambridge University Press, 168 pp. The author in his introduction gives a brief description of the beef industry on the Continent, and points out that for our conditions the Continental method so often advocated by so-called authorities must be considerably modified before it can be adopted in this country.

For our national welfare the author, however, insists that there must be a change in our methods of beef production. He then goes on to describe and to discuss the reasons why "the store-stock trade became paramount in our agricultural economy." In this chapter (Chapter II.) he gives the life history of a store bullock reared on grass, which method he terms "land robbery," and compares it with a store reared on plough land and grass.

In Chapter III. the author describes the present methods of producing grass beef, and, in conclusion, compares the returns from three large grazing bullocks and five yearlings, assuming that the latter can be kept on an equivalent amount of grass as the former. From his figures he arrives at the result that the five yearlings will give 230 lb. of beef over that yielded by the three large bullocks.

In dealing with the question of the winter feeding of old bullocks, he maintains that "under pre-war conditions the only means of making a profit lay in the extra richness imparted to the farmyard manure."

In Chapter V. Mr. Mackenzie gives his constructive policy which may be summarised in the word "beeflings." By "beeflings" he means the production of baby beef and the feeding of an animal from the time it is dropped till it goes out ready for the butcher at from twelve to fifteen months old. He gives a very interesting description of the methods of rearing a calf and of turning it into baby beef.

To carry out this practice successfully it is necessary to have "decently-bred calves," and to obtain these Mr. Mackenzie holds that the number of "dual purpose cattle" must be increased and should become the common stock of the country. He describes a dual purpose animal as an animal that will produce quantity of milk, beef and veal, though he considers that it might be possible to produce a breed that would be perfect for milk, butter, beef and veal.

To the argument of the admirers of the purely dairy breeds, who advocate their utility on all classes of land, that the thin-fleshed cow is compensated by the extra amount of dairy produce, he answers, "diseases of all sorts are only too often liable to end a career which is at best none too long to secure a return for the food expended in growing an exclusively dairy cow." On the other hand, he maintains that the purely beef cow "fails fundamentally on economic principles," and in his opinion "the factor that limits intensive production of milk, meat and corn in combination off average land is, apart from prices, the small number of good dual purpose cattle." Two chapters are devoted to "Pedigree Breeding" and to "Possibilities of the Future." Mr. Mackenzie concludes his book with a chapter on "Breeds of Cattle." In this he gives an unbiassed opinion of the merits and demerits of the different breeds. To a student of live stock this chapter should prove valuable, as it is seldom possible to find a work on cattle in which each breed is not so "written up" as to make it appear the only breed suitable for any purpose, irrespective of soil and climate.

In his book Mr. Mackenzie brings forward a policy that is very well worth the serious consideration of practical breeders and feeders, though we cannot agree that the accusation of "land robbery" is altogether just in describing the system of grass rearing of store stock. That the excessive feeding of concentrated food to winter-fed bullocks, which Mr. Mackenzie so much deplores, is wasteful no one will deny, but experiments carried out during the War at the Norfolk Agricultural Station demonstrated that it is possible to turn out old bullocks fat in sixteen to twenty weeks by only using 1½ lb. per head per day of common cotton cake besides hay and roots.

The author emphasises the fact that to carry out his policy only good calves must be used. But till the millenium is reached, when there are no bad calves in the United Kingdom, the universal production of beeflings cannot be accepted in its entirety.

The author very clearly shows the large field that lies open for research not only by the practical breeder but also by the scientist. He points out how comparatively little help has been given by the scientist to the breeder in the many complex problems of breeding cattle.

The scientist who is interested in these problems would do well to read the chapter on "Possibilities of the Future" (Chapter VIII.), in which Mr. Mackenzie so ably shows what it is the farmer wants.

Dr. F. H. Marshall contributes a chapter in which he deals with certain problems in animal physiology.

Any book that suggests a policy for the improvement of agriculture is interesting, but one written by such an eminent authority on live stock as Mr. Mackenzie should receive the very careful consideration of any farmer or scientist interested in the subject.

Science and Fruit Growing.—Being an account of the results obtained at the Woburn Experimental Fruit Farm since its foundation in 1894, by the Duke of Bedford, K.G., F.R.S., and Spencer Pickering, M.A. F.R.S. (London: Macmillan & Co., 1919, pp. xxii + 348). Every one interested in the progress of Scientific Fruit Growing will welcome the publication of this abridged account of the results obtained at Woburn since its foundation 25 years ago. The book is not only welcome because several of the annual reports of the Experimental Farm are very difficult to obtain, but chiefly because it gives the results a more proper perspective, and many of the conclusions, which when they first appeared were somewhat startling to the average grower, seem more acceptable in their present setting.

To those engaged in similar and kindred research to-day the book is invaluable not only in its chronicled successes but in its failures, for though many of the conclusions as they stand are very often in question yet this very fact will act as a stimulant.

When we remember the fearless courage with which the authors set out on this totally unexplored field of English Horticulture, we are all the more grateful for this contribution to the science and practice of the industry.

Let the practical grower at the outset remember that the authors are fighters of the old school who obviously love to enter the lists to tilt now with this opponent, now with that. Note their equal satisfaction at unhorsing "a recently formed Government Department" for advocating a remedy and making trials of it afterwards, at jousting with their brother chemists over "the short duration of their experiments" which they hint should have lasted 111 years, and at their frequent thrusts at the practical man for his incredulity and "blind observance of traditions."

The authors in modest mood ask their critics to "be lenient" and again to dissociate themselves from "the oft repeated, and more often mistaken cry of the antagonism between theory and practice"; and yet, as we read, we feel that in their hearts they would be disappointed if they did not arouse a challenge.

Unless this attitude is understood the authors' method of approaching their subjects of experiment is bound to detract from their true value.

One other feature often seems to obscure the value of definite results—the attempt always to find "the mean" and to draw a generally applicable conclusion from subjects which the experimenter says he realises possess inherent variations.

Several chapters suffer from an obscure presentation and a disputable use of the facts. For instance, quite early on in the book, when giving data upon the value of bastard trenching the writers put before us a table showing the various effects upon soil and plant growth, and though some show more decided inclinations than others, they take the mean of the lot which "is found to average exactly nil." "Evidently," they continue, "it is not an operation on which a fruit grower should spend his money."

Again in the chapter on Pruning the grouping together of Bramley, Cox and Potts, and the striving after mean values, obscures the weighty conclusions arrived at. The use of the same method in Chapter XIV. on "The Flowering of Apple Trees" leads them to the conclusion that it would be "hopeless to attempt to arrange a number of varieties of apples in a series according to their order of flowering with any degree of precision."

This is probably due to the different method of approach of the trained chemist from that of those generally engaged in biological work.

To the same cause is also probably due the fact that the authors took for granted that they received the trees they asked for upon "Crab and Paradise" and that "Crab" and "Paradise" were known quantities of definite habit.

The authors note that logically a complete experiment should embrace the whole period of a tree's life, from its grafting to its death, and their book is most skilfully arranged, progressing from the preparation of the ground, and the method of planting, to the culminating points of manuring and fruiting, but unfortunately the first elements of nursery practice had to be relegated to the "odds and ends," and much avoidable variation had consequently to be faced and doubtless helped further to complicate many results.

Had the authors not taken their root systems for granted they would never have said "it is only in certain minor respects that the stock influences the growth of the scion."

The outstanding features of the book may be summarised as follows :—

Planting (Chapter IV.)—These experiments which aroused so much controversy in the past were actually initiated "to test the evil results of careless planting" and when the results did not demonstrate these they were duplicated and repeated again and again, until 146 sets of experiments had been tried in very different localities and under very different conditions, with a large majority of results in favour of careless planting.

With obvious enjoyment the authors tell us they had "difficulty in persuading the planters to be sufficiently rough in their handling of the trees." Thus they throw down the gauntlet and advocate planting "in gate post position." However in their very careful analysis of the causes of the beneficial effect of "rough planting," they admit that root injury is an important factor, and beyond a certain point may even have an adverse effect, and that it "leaves this benefit to be accounted for solely by the ramming of the soil." They then show very clearly how this is effected by bringing the soil particles into the closest possible contact with the roots which starts them into early growth and point out that the ramming advocated would be disastrous if it involved the consolidation of any wide area of soil, but that it only affects the earth immediately surrounding the roots, out of which "hard ball" the roots soon find their way. On all but a light sandy soil, and on the London clay, ramming was proved to be beneficial, and there is no reason to dispute this conclusion.

The very interesting point is made, and clearly explained, that whilst the normal method of planting—merely treading in the roots—is adhered to, it can only be done with success during favourable soil conditions whilst planting by the ramming method can be done successfully under any conditions. This ramming must be distinguished from the "string-fellow method" of planting which is much more drastic in its treatment of the roots.

Pruning (Chapters VI. and VII.).—The gauntlet is thrown down again in one of the opening sentences, which states "that pruning encourages growth is, except under certain special conditions, one of the fallacies prevalent in horticulture."

In the course of two chapters we gradually learn what the authors mean by "growth" and "certain special conditions," but to the man who knows that he prunes for the special purpose of encouraging growth, it is not a promising beginning. However, these chapters are full of suggestion and sound advice, though they would have been much better reading had the authors stated more clearly when they were dealing with young trees, and when with mature trees, and when they were thinking of pruning for shape and when pruning for other purposes.

These chapters go to show that generally speaking the unpruned trees equal or exceed in vigour the pruned, and that they crop more heavily and bear crops of a greater total value. The authors lead us on thus: "From every point of view, therefore, it would appear that pruning is disadvantageous to a fruit tree, and that the more it can be reduced, the better." Then they add, "but this does not by any means imply that it ought to be dispensed with." In shaping, spacing and rejuvenating prune by all means, but the less the normal growth and formation of fruit buds are interfered with the better—this is very conclusively proved. At least 117 varieties are grouped in these trials, but it yet remains for some one to modify the general principles in accordance with individual characteristics.

With regard to root pruning, after subjecting some of the trees to an attack as severe as any they have made on established practice the authors come to the conclusion that the former practice is only to be undertaken with "extreme moderation."

Manuring (Chapters IX. and X.).—In these two chapters the authors put before us two very different results with regard to the manuring of the top fruits. Whilst the experiment carried out for 22 years at Ridgmont showed that "apple trees which have been dressed every year throughout that period with various dressings of artificial or natural manure have shown no appreciable advantage over similar trees which have received no dressing whatever," similar experiments on the poor soil at Millbrook gave very decided results, and even emphasised the benefit of potash and the opposite effect of phosphate on that particular soil.

If the authors did not attempt to reconcile the two results and were not so sure that "the absence of results at Ridgmont could not be attributed to any fault in the experiments themselves," the reader would have been tempted to wonder whether the closeness of planting had anything to do with it, seeing that some trees were removed during the experiment and only the Bramleys were left—hardly the most responsive to such trials. In any case these chapters are full of interest and suggestion, and end with an appeal to practical farmers to make manurial experiments on their particular soils. Nothing could be more calculated to awaken the desire.

There is also much information about the special use of farmyard manure for bush fruits, the effects of green manuring on fruit and valuable investigation into the legitimate loss of weight of farmyard manure in transit.

The Fruiting of Trees in Consecutive Seasons (Chapter XIII.).—On this subject a most interesting investigation has been undertaken and valuable data already accumulated. One sentence will sufficiently suggest the trend of the results:—"Fruit trees have, so to speak, long memories, and their behaviour in any particular season is conditional, not merely by immediate antecedent circumstances, but by their previous behaviour, during at least three foregoing seasons."

Chapters XV. to XXIV. are chiefly taken up with observations on insecticides and fungicides and in describing experiments against definite diseases; they are full of interesting information on the fungicidal action of sprays and so forth, and it may here be noted that throughout the book the authors have not forgotten to make clear general statements invaluable to all students, such for instance as their analysis of plant sprays, description of wind frosts and radiation frosts, and the introductory chapter on the structure and functioning of plants.

The effect of Grass on Trees and kindred subjects (Chapters XXV. to XXIX.) occupy nearly the last third of the book, and is one of the most valuable contributions ever yet made to horticultural science and opens up the whole vast subject of the reciprocal effect of the plant and the soil on each other, a subject of which we as yet "are only on the fringe," as the authors themselves say. To quote from the report, "no form of ill treatment examined at Woburn, except lifting the trees every year, caused a reduction of vigour comparable with that produced by grass."

If more planters of trees realised this fact hundreds of acres of potentially valuable orchards would not be spoiled annually as at present. If they realised that the "pale sickly green of the leaves, so distinct from drought and scorching, and yet so prevalent, was the effect of grass and weeds, the value of clean plantations would be more universally accepted. Hardwooded plants recover only with difficulty from any stunting effect in early life."

The causes of the stunting effect of grass and weeds are very closely examined and all the popular explanations such as æration, water supply, food supply and physical condition were made the basis of separate experiments and were not found to be the true cause.

The ultimate conclusion is that the damage is "due only to some toxic influence interfering with the physiological action of the plant, and preventing it from utilising the food which is present." There follows from this a most valuable description of the toxic action of one crop upon another and the behaviour of plants in masses. All this part of the book is very fully illustrated photographically, a most welcome method of recording. It is a pity that the Ridgmont soil and climate seems to lead to extremes, for once more the authors lead their readers on almost to the point of believing that they had only dreamt of the fine grass orchards they had seen properly managed, though finally they mention that depth of soil and a ready drainage help to mitigate the evil of grass, but the authors' attitude throughout is very well illustrated when they try to rebut the argument of the good grass orchard: "In the almost invariable absence of definite measurements and of the means of comparing them strictly with trees in tilled ground, it is impossible to state that they have not suffered at all from the grass."

Such tricks are bound to leave readers in a critical mood, but we should not allow them to detract from the real value of the main work. R. G. H.

Mendelism, by R. C. Punnett, F.R.S. 5th Edition, 1919 (Macmillan & Co.), pp. xiv+219, 7 plates, 52 text figures.

It happens now and then in science that some investigator —not necessarily endowed with higher intelligence than the great men of his time, but always possessed of entire sincerity, an unruffled patience which learns humbly from nature without seeking there the fulfilment of his own preconceptions—discovers some principle which proves to be a key to a locked book in which the answers to many of nature's riddles may be found. Such a principle was Darwin's law of natural selection, which, in spite of all recent attempts to belittle it, will remain the basis of our understanding of adaptation in plants and animals. Another was Mendel's theory of hybridism, which is now known by his name. It was published in 1865 in a paper of only forty pages, which was, somewhat unaccountably, lost sight of. In 1900 this paper was rediscovered by de Vries and others who at once realised its importance, and since that time experimental verifications of Mendel's theory have been obtained on all sides. The accumulation of data and the extension of the theory proceed at such a rate that any book on the subject is soon out of date, and it is symptomatic that we already have the 5th edition of Professor Punnett's book on Mendelism. Probably the subject is growing more rapidly, living more furiously, than any other branch of biology.

Mendel's experiments on green peas were performed in the monastic garden at Brünn, where results were obtained, which, at first sight, seemed curious, though they could be regularly repeated. When he pollinated the flower of a tall variety of pea with pollen from a dwarf variety, or *vice versa*, he found that the plants reared from the hybrid seed were all of the tall form, the dwarf parent having no apparent part in them. But when these hybrid plants were allowed to self-pollinate in the normal way their progeny were not all long, but, on an average, out of every four plants three were tall, one was short and none were intermediate. Further, all the dwarfs of this generation bred true, whereas of the longs only one-third bred true and the others gave, like their parents, both tall and dwarf progeny.

This is an important discovery for any one to make, but what is still more to Mendel's credit is that he correctly interpreted the result. To-day it may be expressed in different terms and many complications have to be explained, but the fundamental conception is as Mendel left it.

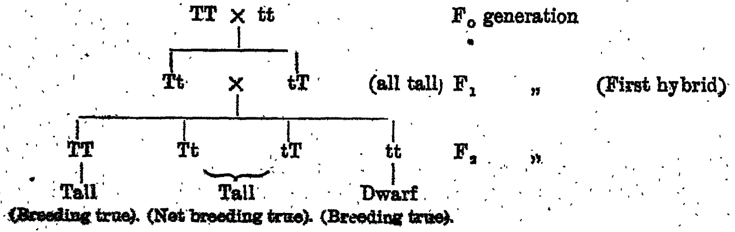
Fertilisation consists in the fusion of two *gametes*, or sexual cells, of which, at any rate in the higher plants and animals, one is male and the other female. The unfertilised ovum is the female gamete, and when it has fused with the male gamete it becomes a *zygote*. Any theory of heredity must premise that all the characters that are derived by an offspring from its parents are in some way carried by the gametes and the zygote obtains a double set of characters, one from the mother and the other from the father. If any particular character is possessed by both mother and father then the progeny receives this character twice over, but if only one of the parents possesses it the progeny receives it only once.

Now let us suppose that tallness is a character possessed by the female parent and not by the male parent. The female gametes all carry this character of tallness, and the male gametes do not. We will distinguish the presence of the character by T and its absence by t. Then the zygote, as regards this character is composed of T + t and may be written Tt. When the plant reared from this zygote in its turn becomes reproductive a process of *segregation* occurs. For the gametes which it produces do not carry both the characters of T and t, but only one. Thus some of the gametes have T and others t, and it is an even chance which any one gamete, either male or female, will possess. When fertilisation is again effected we may get in even numbers (placing the female gamete first) TT, Tt, tT, or tt.

Now one gamete is sufficient to give the character to an individual (or if we do not choose to think in terms of the presence and absence theory we may say that T is *dominant* to t and t *recessive* to T).

Thus a plant of the composition Tt is tall and has the same appearance as TT; but when self-pollinated it is capable of giving rise to tt or dwarf plants, whereas TT can only breed true.

The results may be expressed diagramatically as follows :—


TT × tt
F₀ generation
Tt × tT
(all tall) F₁ „ (First hybrid)
TT
Tt
tT
tt
F₂ „
Tall
Tall
Dwarf
(Breeding true). (Not breeding true). (Breeding true).

This is the fundamental conception of Mendelism. Mendel proved that it worked not only with the character of tallness, but with seed characters (wrinkled or smooth) and flower colour. It has since been verified for numerous characters in fowls, rabbits, mice, and a host of other animals and plants, and some of the most convincing verifications have resulted from the hybridising of insects.

This, however, is its simplest manifestation. When individuals are crossed which differ not in one character only, but in many, a large number of new forms will arise limited only by the number of possible combinations of maternal and paternal characters. Further, characters frequently show the phenomenon of "coupling" so that they generally, though not always, appear together in individuals.

One of the most important of the results of the Mendelian hypothesis, both from the theoretical and economic standpoint, is the conception of *unit characters* which follows from it. The old idea of evolution by immeasurably small increments has given place to a belief in quite considerable jumps or mutations, so that a species is now considered to vary by the acquirement or loss of some definite character. Man had previously become obsessed by the results of human crossing such as the mulatto, in which F2 generation, rarely, if ever, shows a reversion to either parental type. Intermediates may be found of all grades of colour between the white man and the black; but this may be attributed to an extreme complexity of unit characters and the oneness of all life is prettily exemplified by the fact that the solution of the problem of the mulatto is suggested by Nilsson-Ehle's work on the inheritance of red and white colour in the grain of wheat.

In the new edition of Professor Punnett's book, two new chapters are included on recent American work on the fruit-fly, *Drosophila*. They deal chiefly with the co-ordination of the knowledge gained from hybridisation with the cytological observations on the chromosomes in the nucleus. It is impossible to deal with this subject briefly, but its extraordinary interest will be readily acknowledged. It seems likely that in the near future we shall be able to locate in a chromosome, which is visible even under a moderately powerful microscope, the actual material unit which carries a particular character.

Professor Punnett's book should be read by all who take an interest in the improvement of stock. The chapter on the economic aspects of Mendelism will appeal particularly to agriculturists; but this book as a whole is so very readable, and at the same time concise and clear, that no part of it could be missed without regret. At the end of its 215 pages of large type, one wonders how so much matter can have been pressed into so little space without producing any oppressive sense of congestion.

W. E. HILEY.

Land Drainage from Field to Sea. C. H. J. Clayton, with a preface by the Rt. Hon. Sir Ailwyn Fellowes, K.C.V.O., K.B.E. (London, George Newnes, Ltd., 1919, pp. xii. + 192, illustrated).—In the history of the reclamation of land for farming purposes nothing arrests the attention or compels the admiration more than the great drainage works accomplished in many parts of the country. Some of these works are of great antiquity. Tacitus tells how the Britons were employed by their Roman conquerors in draining and embanking land—possibly on Romney Marsh—and many centuries later the great religious houses are known to have been particularly active in this way. Later still we find the great landowners of the Stuart period associating themselves with vast schemes for the drainage of the Fens, and the name of Cornelius Vermuyden will be remembered as that of the most famous of the band of Dutch engineers whom they called to their aid. The work has continued up to the present day, and at the moment of writing reclamation works are in progress on the east coast and in a few other places.

It is a regrettable fact that owing to a variety of causes the works themselves in too many cases are inadequate, whilst in others schemes admirably conceived and executed have been reduced in efficiency, or been rendered useless, by the ignorance and neglect of those responsible for their maintenance, but the passing of the Land Drainage Act, 1918, will facilitate the setting up of new areas of control, and the consolidation of interests, which should go a long way towards effecting the regeneration of many inefficient or decaying drainage systems. The appearance of Mr. Clayton's book, therefore, is timely, and moreover it supplies a want which many agriculturists and students of agriculture must have felt, for there is an almost complete lack of practical works on the subject of arterial drainage available for the general reader. Mr. Clayton writes from a life-long experience as the chief drainage engineer of the Ministry of Agriculture and Fisheries, and his book is well planned, well carried out, well illustrated, and well indexed. Sir Ailwyn Fellowes, a past-president of the Ministry, has contributed a preface, in which the reasons for the state into which many of our main arterial drainage systems have lapsed are considered, and he gives the first place truly enough to "a chaos of authorities and an absence of authority." Other real difficulties, and probably even more difficult to surmount, are the conflicting interests of mill-owners, transport workers and farmers. It is too often found that whereas the two former are concerned to maintain a certain water level, this can only be achieved by injury to the latter. The writer has in mind the case of a navigable river in the Midlands which is maintained constantly at a level which has brought about the water-logging of many hundreds of acres of land adjacent, solely to facilitate the passage of one or two barge-loads of produce *yearly*. In these days of speedy rail and motor transport, and with the concentration of the milling industry at the ports, it is probable that on most of the lesser rivers the removal of locks and weirs would result in a considerable margin of gain to the community even though a few individuals might suffer.

THE CARDIFF SHOW, 1919.

IN December, 1912, the Council accepted an invitation to visit Cardiff in 1917, but, owing to the national situation at the end of the preceding year, it was realised that it would not be possible to hold the fixture at the time originally arranged. It was then agreed that the proposed Show should be postponed indefinitely, and that Cardiff should be the venue of the first Royal Show to take place after the war. By kind permission of the Marquess of Bute, the owner of the property, the Showyard plant and material, which had been transported from Manchester, was stored on the site till required.

The Council assumed considerable responsibility in deciding to hold the Show in 1919, as the conditions throughout the country were still far from normal and there was a great doubt as to whether the railways would be able to cope with the requirements of exhibitors and visitors. While the Railway Companies were unable to revive the various concessions formerly enjoyed by members, exhibitors and visitors to the Show, the transport arrangements were carried out by them in a manner which surpassed expectations, and the general result justified the Society's action.

After the cessation of hostilities in November, 1918, no time was lost by Sir Gilbert Greenall, the Honorary Director, in pushing on the preparations for the holding of the Show in the following summer. The time available was none too long; but, thanks to the cordial co-operation of all interested, the exhibition which took place from Tuesday, June 24, to Saturday, June 28, was from every point of view a great success.

On the first occasion that Cardiff offered hospitality to the Society, in 1872, the Show took place in Cathays Park, and resulted in a deficit of 602*l*. In 1901, when the City was again visited, the total attendance of 167,423 had up to that time only been exceeded on three occasions; the financial result was a credit balance of 1,998*l.*; and it was the only Show held by the Society after 1897 to be financially remunerative until the policy of migratory Shows was resumed in 1906.

Amongst other things, the 1901 Exhibition was notable for the introduction into the Society's Showyard of Horse-jumping Competitions. These proved to be a popular and attractive feature, and similar competitions have taken place at each of the Society's Shows since that time.

Particulars of entries, attendance, &c., of the three Shows at Cardiff are given below:—

Year	President of the Year	Implements entered	Entries of live stock	No. of persons admitted	Financial Result (+=Profit —=Loss)
					£
1872	Sir W. W. Wynn, Bt., M.P.	5,843	1,293	85,185	—602
1901	3rd Earl Cawdor	4,070	1,575	167,423	+1,998
1919	Sir J. B. Bowen-Jones, Bt. . . .	3,918	2,502	191,694	+12,039

As in 1901, the site utilised for the Showground this year consisted of the Recreation Ground adjoining Sophia Gardens, and parts of Pontcanna Farm belonging to the Marquess of Bute and in the occupation of Mr. Templeton. The ground occupied was 110 acres in extent, picturesquely situated between the River Taff and the Cathedral Road, with a beautiful double avenue of lime trees running almost its entire length. The main entrance was from Cathedral Road by way of Talbot Street, and throughout the Show there was an excellent service of trams from different parts of the City to within a short distance of the gates.

The list of prizes, framed on the customary wide basis of pre-war days, included classification for almost every recognised breed of British live stock. This was made possible by the assistance received from the various Breed Societies and the Cardiff Local Committee, who contributed generously to the prize fund. For the first time classification was provided for Percheron horses and for Gloucestershire Old Spots pigs. Prizes were also offered for rabbits of ten different breeds.

Particulars of entries, classes and prizes in all sections will be found in the tables on pp. 271 and 272.

Plates of the champion animals in the horse section appear as illustrations to this report.

The third Cardiff "Royal" will be memorable as the first to be visited by H.R.H. the Prince of Wales, who arrived in the City on the evening of Monday, June 23, and, during his stay, was the guest of the Marquess of Bute at Cardiff Castle.

His Royal Highness on the Tuesday paid a visit to the Rhondda Valley, and on the Wednesday and Thursday he attended the Show. On the Friday morning His Royal Highness left the City for Swansea.

Entries of Live Stock, Poultry, and Produce.

	Cardiff, 1919	Manchester. 1916	Nottingham, 1915	Shrewsbury, 1914	Bristol, 1913	Doncaster, 1912	Norwich, 1911	Liverpool, 1910	Cardiff, 1901
Horses . .	[1]569	[1]518	[1]500	[1]819	[1]584	[1]773	[1]716	[1]686	355
Cattle . .	[1]867	[1]803	[1]862	[1]1,272	[1]1,138	[2]1,089	[1]1,065	[1]938	553
Sheep . .	586	607	575	[1]886	736	[2]734	746	772	519
Goats . .	91	92	—	—	—	—	—	—	—
Pigs . .	389	321	360	417	394	[2]426	416	361	148
Total . .	2,502	2,341	2,297	3,394	2,852	3,022	2,943	2,757	1,575
Poultry . .	1,383	1,519	1,286	1,373	1,486	1,242	1,218	1,195	701
Rabbits . .	278	—	—	—	—	—	—	—	—
Produce . .	387	565	461	895	685	559	670	701	521

[1] Exclusive of Double Entries.
[2] Exhibition of Cattle, Sheep and Pigs prohibited by order of Board of Agriculture.

Shedding in Implement Yard.

Description of Shedding	Cardiff, 1919	Manchester, 1916	Nottingham, 1915	Shrewsbury, 1914	Bristol, 1913	Doncaster, 1912	Norwich, 1911	Liverpool, 1910	Cardiff, 1901
	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
Ordinary . .	4,540	3,300	4,885	6,610	6,870	7,050	6,690	7,590	7,245
Machinery .	4,200	1,290	2,935	3,405	3,665	3,125	3,095	2,555	2,305
Special . . (Seeds, Models, &c.)	2,469	2,480	2,884	3,473	3,689	3,363	3,907	3,420	2,101
Total . . [Exclusive of open ground space]	11,209	7,070	10,704	13,488	14,224	13,538	13,692	13,565	11,651
No. of Stands	371	239	339	439	513	442	457	454	358

Tuesday, the opening day, in accordance with invariable custom, was devoted to the business of judging in all the live stock sections. In the afternoon a meeting of much importance to stock-owners took place in the Large Tent concerning the question of the importation of Canadian store cattle. This meeting was attended by representatives of agricultural and breed societies, and, after discussion, a resolution was passed deprecating any proposals to repeal the Diseases of Animals Act.

A noteworthy event of Wednesday was the visit, under the auspices of the Imperial Education Committee of the War Office, of over a thousand soldier agriculturists from the Overseas Dominions and from the United States of America. During their stay in the neighbourhood these troops were

COMPARATIVE STATEMENT OF ENTRIES, ETC., AT TWO SHOWS HELD AT CARDIFF IN 1901 AND 1919.

HORSES AND CATTLE	1901		1919	
	Classes	Entries	Classes	Entries
HORSES :—				
Prizes .	—	*£1,818*	—	*£3,420*
Shire	7	68	11	72
Clydesdale . .	4	17	9	22
Suffolk . . .	4	19	8	60
Percheron . .	—	—	3	40
Hunter—				
Breeding Classes.	9	40	12	45
Riding Classes .	—	—	5	92
Polo and Riding Pony—				
Breeding Classes	7	39	5	40
Hack and Riding Pony . . .	—	—	4	34
Cleveland Bay .	3	15	2	4
Coach Horse . .			2	7
Hackney . . .	10	44	7	17
Hackney Pony .	4	21	4	21
Welsh Pony . .	2	18	13	47
Shetland Pony .	2	10	2	7
Mountain, &c., Pony	2	5	—	—
Driving Classes .	4	28	7	56
Draught Horse .	3	18	—	—
Trade Turnouts .	—	—	4	50
Colliery Horse. .	2	13	4	9
Jumping . . .	5	34	4	95
Trotting . . .	—	—	4	16
Total for HORSES	68	389	110	744
CATTLE :—				
Prizes .	—	*£1,778*	—	*£2,979 10s.*
Shorthorn . .	7	104	11	117
Dairy Shorthorn .	—	—	7	95
Lincolnshire Red Shorthorn . .	4	18	8	33
Hereford . . .	7	76	10	111
Devon . . .	6	32	6	29
South Devon . .	—	—	5	22
Longhorn . . .	2	6	4	15
Sussex . . .	5	24	5	21
Welsh . . .	7	37	8	30
Red Poll . . .	5	28	6	45
Aberdeen Angus .	4	33	6	41
Galloway . . .	4	19	5	25
Highland . . .	2	3	—	—
Ayrshire . . .	2	6	3	8
British-Friesian .	—	—	6	79
Jersey . . .	5	72	8	105
Guernsey . . .	5	35	7	71
Kerry . . .	3	18	4	8
Dexter . . .	3	36	4	19
Dairy Cattle . .	1	6	2	—
Milk Yield . .	—	—	13	99
Butter Test . .	—	—	3	82
Total for CATTLE .	72	553	131	1,055

SHEEP, PIGS, POULTRY, RABBITS, PRODUCE	1901		1919	
	Classes	Entries	Classes	Entries
SHEEP :—				
Prizes .	—	*£1,330*	—	*£2,020 10s.*
Oxford Down . .	5	48	5	49
Shropshire . .	6	76	7	64
Southdown . .	5	76	6	57
Hampshire Down .	5	61	6	45
Suffolk . . .	5	29	6	24
Dorset Down . .	—	—	3	4
Dorset Horn . .	2	8	4	17
Ryeland . . .	2	11	5	43
Kerry Hill (Wales).	—	—	4	36
Lincoln . . .	6	49	6	36
Leicester . . .	4	20	4	9
Border Leicester .	4	22	3	19
Wensleydale . .	2	13	6	25
Lonk	—	—	3	4
Derbyshire Gritstone	—	—	2	5
Kent or Romney Marsh . . .	2	15	6	61
Cotswold . . .	4	26	4	15
Devon Long Wool .	3	9	3	6
South Devon . .	—	—	5	14
Dartmoor. . .	2	8	3	15
Exmoor Horn. .	2	4	3	10
Cheviot . . .	2	7	3	9
Herdwick . . .	2	8	3	6
Welsh Mountain .	3	20	4	6
Radnor . . .	1	3	—	—
South Welsh . .	—	—	2	—
Black-faced Mountain . .	2	6	2	7
Total for SHEEP .	69	519	108	586
GOATS :—				
Prizes . . .	—	—	—	*£119 11s.*
	—	—	13	108
PIGS :—				
Prizes .	—	*£396*	—	*£1,057 5s.*
Large White . .	4	34	8	75
Middle White . .	4	22	6	40
Small White . .	4	12	—	—
Tamworth . .	4	22	6	26
Berkshire. . .	4	51	6	49
Large Black . .	2	7	6	121
Lincolnshire Curly-coated . . .	—	—	6	16
Gloucestershire Old Spots . . .	—	—	6	62
Total for PIGS .	22	148	44	389
TOTAL FOR STOCK	231	1,609	406	2,774
POULTRY :—				
Prizes .	—	*£252*	—	*£457 11s.*
	90	701	148	1,383
RABBITS :—				
Prizes .	—	—	—	*£73 5s.*
	—	—	24	278
PRODUCE :—				
Prizes .	—	*£248*	—	*£585*
	41	521	112	466

Grand Totals for LIVE STOCK, POULTRY, and PRODUCE.			
1901	362 Classes	2,831 Entries	£5,976 [1] Prizes
1919	690 Classes	4,901 Entries	£10,912 12s. [2] Prizes

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[1] Including £124 for Competitions.

[2] Including £200 for Flower Show.

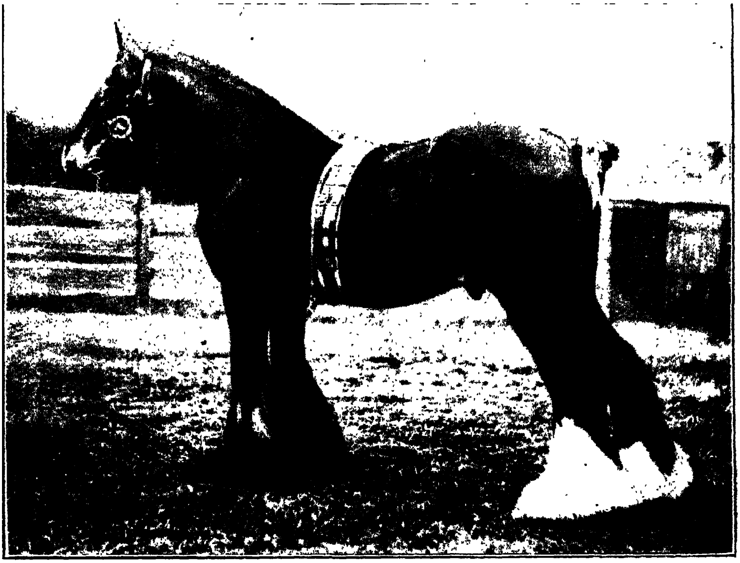

FIG. 1.—SHIRE STALLION, "FENNY EMPEROR."
Winner of Champion Prize for best Shire Stallion, Cardiff, 1919.
Exhibited by MR. DENBY COLLINS.

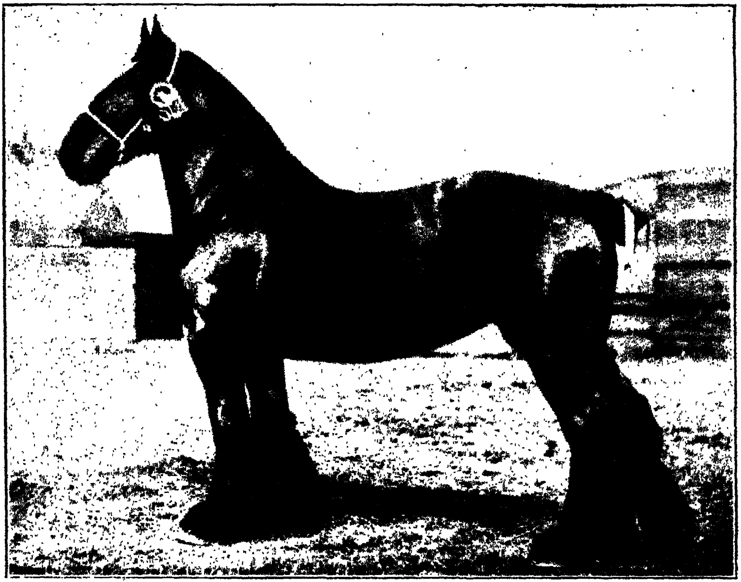

FIG. 2.—SHIRE FILLY, "MEDLAR BELLA."
Winner of Champion Prize for best Shire Mare or Filly, Cardiff, 1919.
Exhibited by the PENDLEY STOCK FARMS.

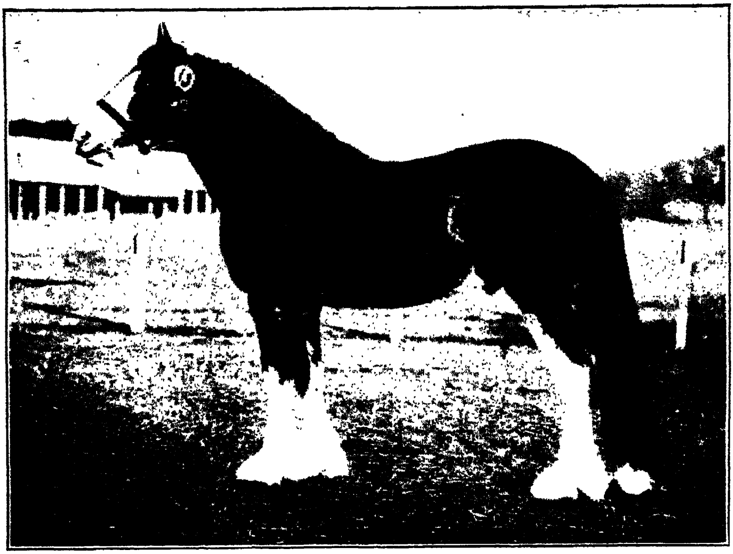

FIG. 3.—CLYDESDALE STALLION, "CARRY ON."
Winner of Champion Prize for best Clydesdale Stallion, Cardiff, 1919.
Exhibited by CAPT. A. M. MONTGOMERY.

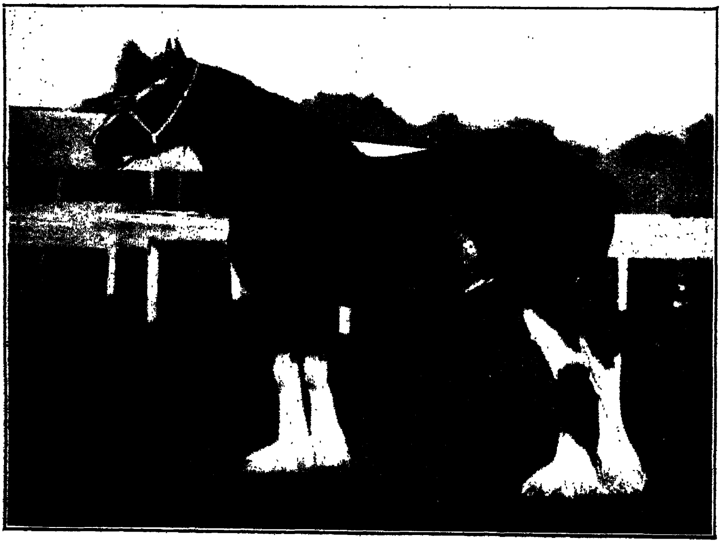

FIG. 4.—CLYDESDALE MARE, "ROSALIND."
Winner of Champion Prize for best Clydesdale Mare or Filly, Cardiff, 1919.
Exhibited by MESSRS. F. J. DICKENS *and* F. CALVERT BUTLER.

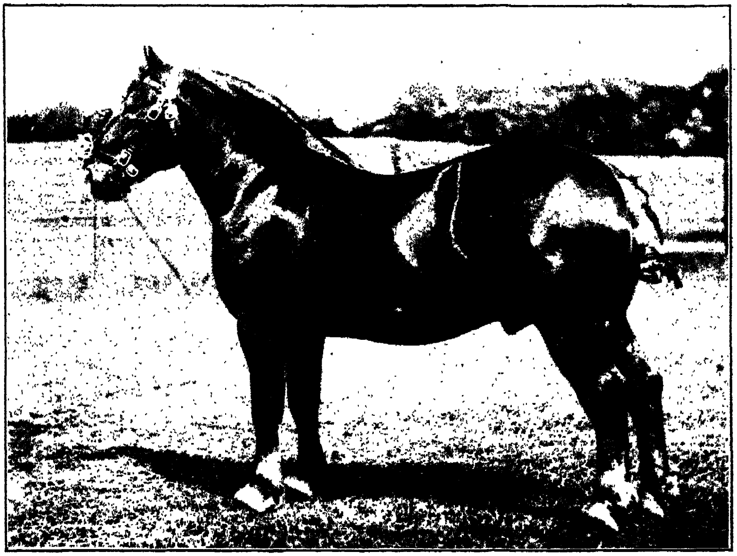

Fig. 5.—Suffolk Stallion, "Sudbourne Artemas."
Winner of Champion Prize for best Suffolk Stallion, Cardiff, 1919.
Exhibited by the Marquis of Graham.

Fig. 6.—Hunter Filly, "The Belle."
Winner of Champion Prize for best Hunter Filly not exceeding 3 years old, Cardiff, 1919.
Exhibited by Lieut.-Col. Sir Merrik R. Burrell, Bart.

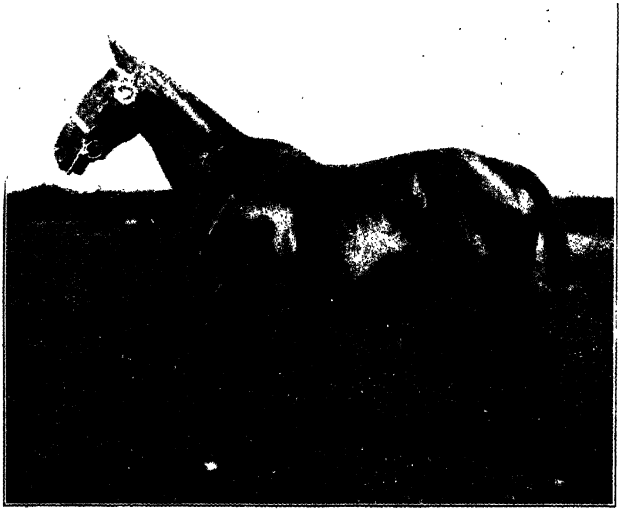

FIG. 7.—HUNTER MARE, "LANDSCAPE."
Winner of Champion Prize for best Hunter Mare, 4 years old and upwards, Cardiff, 1919.
Exhibited by LORD TREDEGAR.

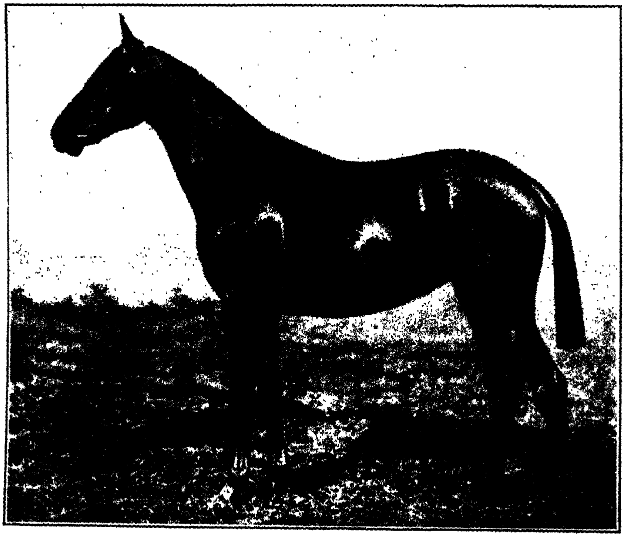

FIG. 8.—POLO AND RIDING PONY FILLY, "AMBER 2ND."
Winner of Champion Prize for best Polo and Riding Pony Mare or Filly, Cardiff, 1919.
Exhibited by MAJOR J. R. B. BRANSON.

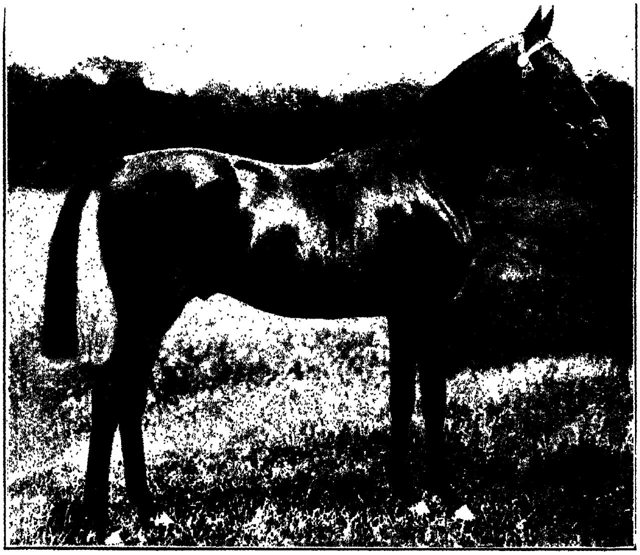

FIG. 9.—POLO AND RIDING PONY STALLION. "PRAIRIE FIRE."
Winner of Champion Prize for best Polo and Riding Pony Colt or Stallion, Cardiff, 1919.
Exhibited by MR. J. MUMFORD.

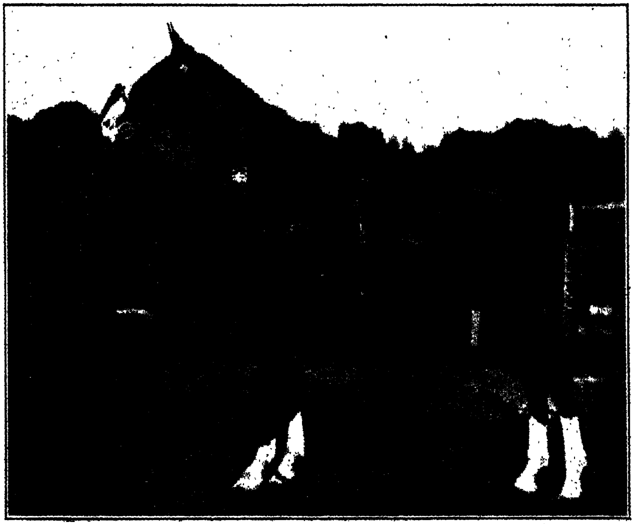

FIG. 10.—HACKNEY STALLION. "KIRKBURN LEADER."
Winner of Champion Prize for best Hackney Stallion, Cardiff, 1919.
Exhibited by MR. C. F. KENYON.

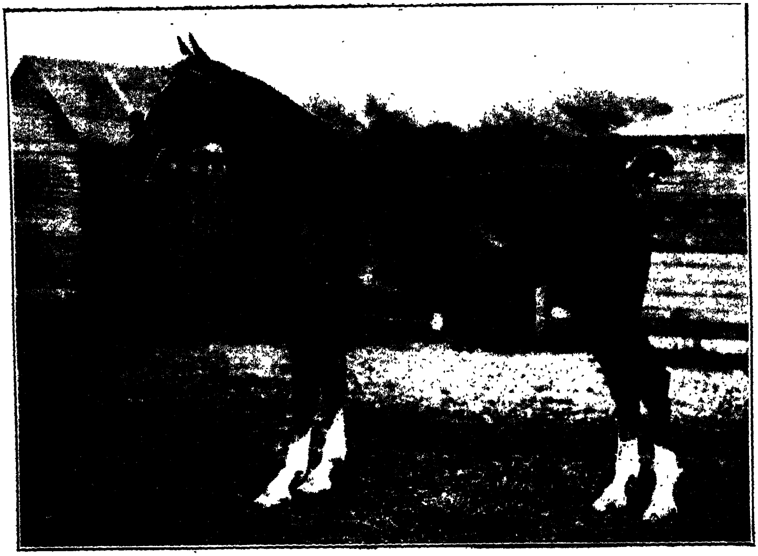

FIG. 11.—HACKNEY FILLY, "DANUM QUEEN."
Winner of Champion Prize for best Hackney Mare or Filly, Cardiff, 1919.
Exhibited by MRS. WALTER BRIGGS.

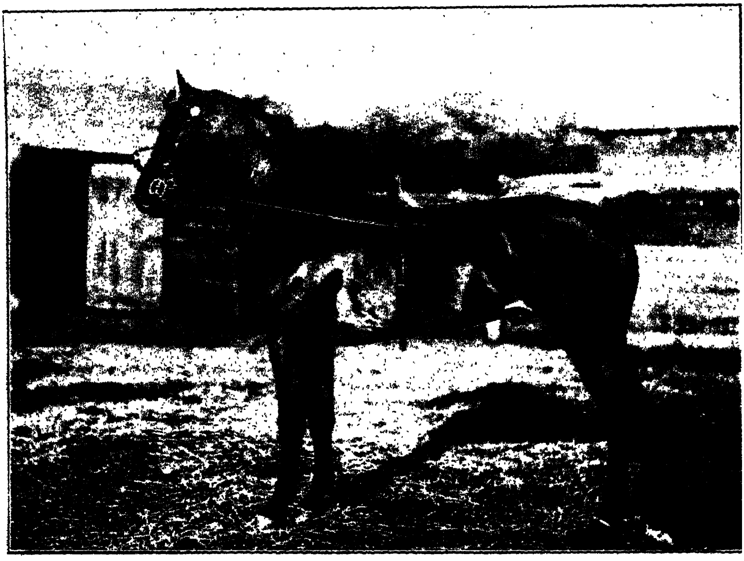

FIG. 12.—HACKNEY PONY STALLION, "JOHNNY SOUTHWORTH."
Winner of Champion Prize for best Hackney Pony Stallion, Cardiff, 1919.
Exhibited by MR. JOSHUA BALL.

FIG. 13.—HACKNEY PONY MARE, "TISSINGTON BAUBLE."
Winner of Champion Prize for best Hackney Pony Mare or Filly, Cardiff, 1919.
Exhibited by MR. W. W. BOURNE.

FIG. 14.—SHETLAND PONY MARE, "MAY QUEEN OF PENNIWELLS."
Winner of Champion Prize for best Shetland Pony, Cardiff, 1919.
Exhibited by MRS. ETTA DUFFUS.

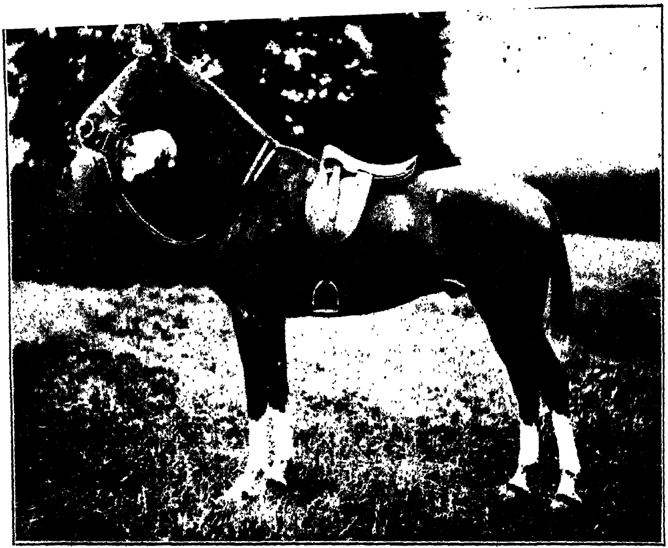

FIG. 15.—HUNTER GELDING, " SATAN."
Winner of Champion Prize for best Hunter Mare or Gelding, Cardiff, 1919.
Exhibited by MR. JOHN DRAGE.

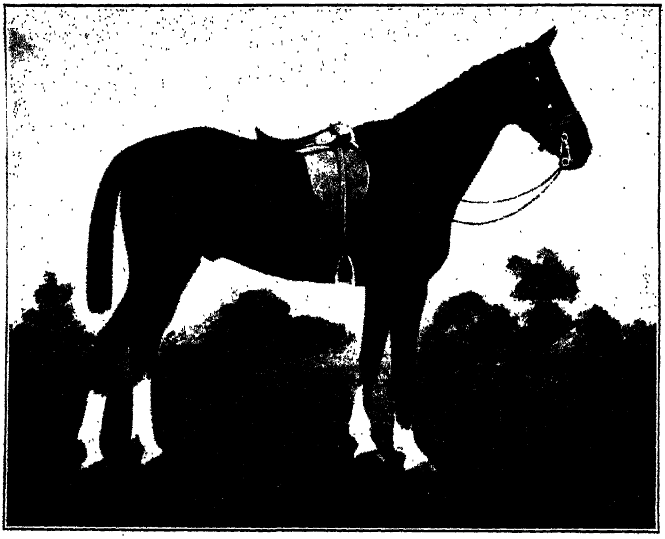

FIG. 16.—HACK AND RIDING PONY GELDING, " AS YOU WERE."
Winner of Champion Prize for best Hack and Riding Pony, Cardiff, 1919.
Exhibited by MAJOR H. FAUDEL PHILLIPS.

accommodated in a special camp at Buttrills. On their arrival in the Showyard they were officially welcomed by the President, who met them in the Large Tent. Sir Bowen Bowen-Jones, addressing the assembled soldiers, said :—

"It is indeed a pleasant duty to receive you all here to-day, and to welcome you to our Show. It is most gratifying to all of us to see soldier agriculturists from the Dominions overseas coming to take part in our agricultural work in this country. We welcome you as soldiers from the Dominions who have fought side by side with the regiments of the Mother country in the defence of right and justice, and we are glad to have the opportunity of recognising publicly the heroic deeds you have performed on behalf of the Motherland, by which you have helped to consolidate this great Empire. I understand that in addition to the Overseas troops we have present with us officers and men from the United States of America, soldiers who have joined the allied cause and who have taken their share in bringing the war to a successful termination. We welcome you further, each and all of you, as brother agriculturists, as brother farmers who have come here to see what our system and method of agriculture is. No doubt you are aware that our systems have been built up from generation to generation in a slow way from the knowledge imparted from father to son, a process which continued until in recent years we have been obliged to move rather more rapidly on account of the conditions of the times. We know that you, on the other hand, in the Dominions have begun *de novo*, as one might say, in fresh lands and having no long traditions behind you, and probably you have devised more excellent methods than we have. We hope that you have something to learn from us, and we freely recognise that we have a good deal to learn from you."

The visitors, in accordance with a prearranged programme, afterwards broke up into small parties and were conducted round the stockyard by expert representatives of the various stud, herd, and flock book societies, who explained the points and merits of the different breeds. Col. Cornwallis acted as Reception Steward in connection with the visit.

On the Wednesday the Prince of Wales paid an official visit to the Show, accompanied by the Marquess and Marchioness of Bute. Arriving at the Showyard entrance about 11.30 a.m., His Royal Highness was met by the Honorary Director, Sir Gilbert Greenall, and conducted to the Royal Pavilion, where he was received by the President. The Royal visitor attended the General Meeting of the Society's Governors and Members. The Large Tent was crowded to its utmost capacity ; and the announcement by the President in the course of his introductory speech, that the Prince had at the Council Meeting that morning been elected a Trustee was received with acclamation. Later in the proceedings His Royal Highness proposed a resolution of thanks to the Lord Mayor and Corporation of Cardiff for their exertions to promote the success of the Show. The motion was passed with great cordiality. After luncheon in the Royal Pavilion, at which he was the guest of the President, the Prince made a tour of the Showground, spending a considerable time in the Implement Section, stopping at a number of the stands to examine the exhibits. Proceeding later to the Royal Box in the Grand Stand, His Royal Highness was much interested in the events in the Ring, particularly the jumping competitions.

On the Thursday the Prince visited the City Hall and was admitted to the Freedom of the City of Cardiff. In the afternoon he made a second visit to the Show, entering the Yard from the Castle grounds by way of a specially constructed temporary bridge over the river Taff. A brief tour of the Yard was made, including visits to the Working Dairy and the Horticultural Exhibition. His Royal Highness also spent some time in the Royal Box at the Horse Ring. After witnessing the judging of a class of Hunters, he went into the Ring and presented rosettes to the winning competitors. In the evening the Prince honoured the Lord Mayor with his presence at the Banquet in the City Hall, held in connection with the Society's visit and attended by Members of the Council and the Local Committee.

On the last two days considerable interest was shown by visitors in the Timbering Competitions, for which there were 63 entries in two classes. The competition consisted of placing and fitting up the timber in such a position as it would be placed in the coal mine for the support of the sides and roofs in connection with the different underground roads and workings. Mr. D. T. Alexander, in addition to his other activities, was Steward, and in conjunction with the Judge, Mr. Thomas Griffiths of Cymmer, Porth, was responsible for the success of the competitions.

For its first post-war Show the Society was fortunate in the weather. Dark clouds gave rise to some misgivings at the time the gates were opened on Tuesday morning, but as the day wore on brighter conditions prevailed. On Wednesday there was a drizzling rain for an hour or two in the morning, but there was an improvement in the afternoon. The rest of the week was fine ; Thursday with bright sunshine throughout being an ideal summer day.

In view of the greatly enhanced cost of the Show, particularly in the erection of the various buildings, shedding, &c., the Council were under the necessity of increasing the prices of admission. No change was made in the charge for the opening day, which remained at 5*s.*; on the Wednesday and Thursday the charge was raised from 2*s.* 6*d.* to 3*s.*, and on the Friday and Saturday from 1*s.* to 2*s.* The number of admissions by payment during the five days was 191,694, a total only exceeded by the Manchester Show in 1897, the year of Queen Victoria's Diamond Jubilee, and the Newcastle Show of 1908. With a surplus of 12,039*l.* Cardiff, however, now displaces Newcastle as the most successful Show from a financial point of view. The tables below give in detail the numbers of admissions on each day at Cardiff and comparative figures for the previous six Shows and the 1901 Show.

(1) *Admissions by Payment at Cardiff,* 1919.

Day of Show	11 a.m.	1 p.m.	3 p.m.	5 p.m.	Day's total.
Tuesday (5*s.*)	2,914	5,788	7,613	8,383	8,466
Wednesday (3*s.*)	8,186	22,851	37,419	44,663	45,096
Thursday (3*s.*)	17,003	38,703	57,728	68,139	68,838
Friday (2*s.*)	10,771	21,389	31,346	35,856	36,292
Saturday (2*s.*)	9,538	17,328	27,168	32,457	33,002
			Total Admissions	. .	191,694

(2) *Total daily admissions at the* 1919 *Show, compared with the previous six Shows and the Cardiff Show of* 1901.

Day of Show	Cardiff, 1919	Manchest'r, 1916	Nottingham, 1915	Shr'wsbury, 1914	Bristol, 1913	Doncaster, 1912	Norwich, 1911	Cardiff, 1901
First . . .	8,466	4,067	1,641	2,166	1,769	1,377	878	3,155
Second . . .	45,096	29,145	12,321	12,566	21,632	10,780	7,140	23,745
Third	68,838	36,938	30,798	19,317	31,155	18,914	20,442	25,063
Fourth . . .	36,292	40,874	26,034	39,397	78,702	39,254	75,266	69,133
Fifth	33,002	38,173	33,089	14,357	45,890	19,814	17,739	46,327
	191,694	149,197	103,883	87,803	179,148	90,139	121,465	167,423

In connection with the Show held in 1916 at Manchester, Entertainments Tax was not charged on the admissions into the Showyard, but the tax was payable on the admissions to certain of what may be termed the "side shows" as well as in respect of each member who attended the Show, as his badge entitled him to enter such "side shows." As the result of interviews with the officials of the Customs and Excise Department and the raising of the question in Parliament, the Society was granted a special exemption from tax for the Cardiff Show on the condition "That the entertainment is strictly of the character described, and does not include Sports, a Band, Dog Show or other extraneous amusements."

All those connected with the Show, whether as officials, exhibitors or visitors, will remember with satisfaction that the first exhibition of the Society after the victorious conclusion of the war was held in the Principality, and that the success of the visit exceeded that of any previous Show.

The Lord Mayor (Mr. A. C. Kirk), as representing the City, maintained the traditional hospitality of Cardiff, and entertained the President of the Society as his guest during the week of the Show, while the leading inhabitants of the City and County also extended hospitality to a large number of visitors. At the Castle the Marquess of Bute entertained a large party to meet H.R.H. The Prince of Wales.

This report cannot be concluded without reference to the splendid work of the members of the Cardiff Local Committee, whose efforts in the Society's interests contributed so largely to the success of the Show. In this connection special mention must be made of the Lord Mayor, Lord Glanely (Chairman of the Local Finance Committee), Mr. E. W. M. Corbett and Mr. C. D. Thompson (successively Chairmen of the Local Committee), Mr. D. T. Alexander, Mr. J. L. Wheatley (Local Honorary Secretary), and Mr. Hubert Alexander, who not only as Steward of Forage but in countless other matters rendered the Society invaluable assistance.

THOS. MCROW.

16 Bedford Square,
London, W.C.

MISCELLANEOUS IMPLEMENTS EXHIBITED AT CARDIFF.

THE very fine Show of Implements and Machinery at Cardiff did great credit to the numerous exhibitors, who, notwithstanding the difficulties in which most of them have been placed by the War, have undoubtedly made a great and successful effort to maintain the high standard of the exhibits at the "Royal."

The number of exhibits was 3,918, and there were some 81 entries for the Society's Silver Medals.

There were a large number of exhibits of tractors, the forthcoming trials of which will be both interesting and instructive. Attention is drawn to the importance of manufacturers avoiding confusion in the designation of tractors and implements intended to be drawn by tractors. A tractor plough, for instance, is generally understood to be a plough only, but the compiler of the index of the catalogue has evidently found it difficult to correctly place many of the exhibits in this section. We have:—Tractor, motor tractor, agricultural tractor, universal tractor, agricultural motor, steam tractor, steam cart, tractor plough, motor plough, &c.

In some cases the tractor is not a tractor only, but is combined with a plough or other implement. Whatever the designation it should be made perfectly clear whether the machine is a tractor only or a combined implement.

AWARDS OF SILVER MEDALS.

The Judges awarded nine Silver Medals to the exhibits here named :—

No. in Catalogue	Exhibitor	Nature of Award
466	THE AGRA ENGINEERING CO., LTD., Eggesford, Devon.	Artificial Manure Distributor (self cleaning).
468	GLOUCESTER INCUBATOR CO., Woodchester Mills, Stroud, Glos.	Gate Fastener.
645	J. W. PROCTOR & CO., LTD., Cestro Works, Chester St., Chesterfield, Derbyshire.	Depth-controlling Device and Transport Arrangement for Disc Harrow.
1308	G. LLEWELLIN & SON, Royal Prize Churn Works, Haverfordwest.	Combination Valve-eyelet and Water-sprayer with adjustable Single Lever Lid Fastener for Butter Churn.
1894	W. N. NICHOLSON & SONS, LTD., Trent Iron Works, Newark, Notts.	Combined Cultivator for rigid or spring tines.
2191	RANSOMES, SIMS & JEFFERIES, LTD., Orwell Works, Ipswich.	Tractor Plough for two furrows, with self-lift and adjustments for varying widths and depths.
2318	BLACKSTONE & CO., LTD., Stamford.	Improved Gear on Combined Swath Turner and Side Rake.
3170	BAMFORDS, LTD., Leighton Iron Works, Uttoxeter.	Hay-loader, new patent, with three-throw cranks.
3294	J. & H. MCLAREN, LTD., Midland Engine Works, Leeds.	Patent Compensating Arrangement on Anti-balance Steam Plough.

The following is a detailed description of these exhibits :—

No. 466. *Artificial Manure Distributor (Self-Cleaning)*, by the Agra Engineering Company, Limited, Eggesford, Devon. The essential part of this implement consists of a single wooden roller, cased in steel. The roller is fluted longitudinally with grooves of such a section that as it revolves in the bottom of the manure box or hopper the grooves become fully charged with the manure and carry it through the bottom of the box on to a fixed metal delivery plate, the edge of which has large triangular teeth throughout its whole length and fits the curve of the roller with which it is in contact. The manure falls through these teeth on to a board studded with pins and thence on to the ground. Metal scrapers kept in contact by springs very effectually clean the roller as it revolves. The rate of delivery is varied by altering the speed of the roller. This is accomplished by means of a set of change wheels easily attached.

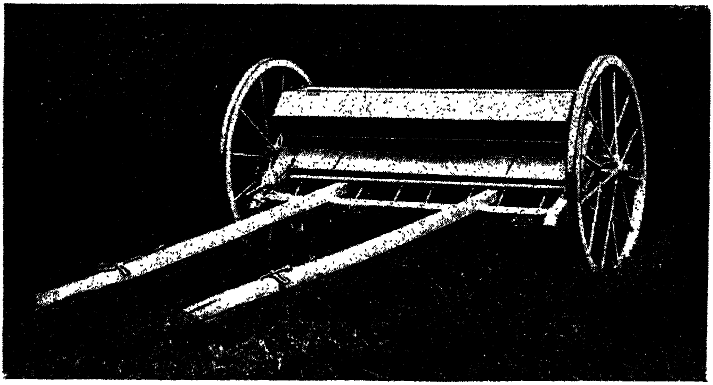

FIG. 1.—Artificial Manure Distributor (Self Cleaning).

The machine was put through a trial in the presence of the judges, and spread a damp sample of mixed manure with perfect evenness. There was no bridging of the manure in the hopper. At the conclusion of the trial the manure box was left empty and the roller perfectly clean.

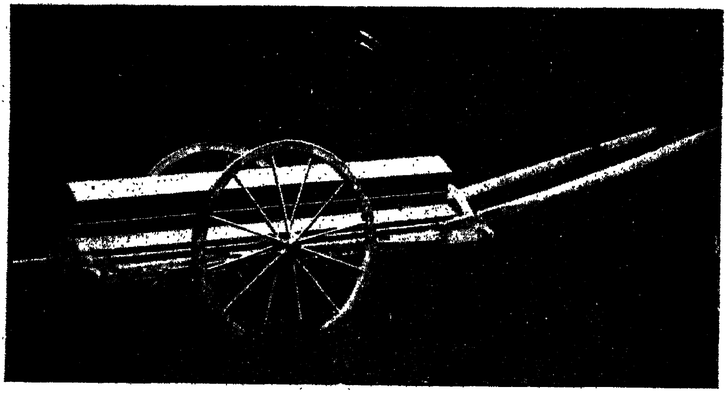

FIG. 2.—The same, arranged for transport.

The simplicity of the implement is much in its favour, as is also its lightness, while it is substantially built and is not wanting in strength. It is made in two sizes, the larger one so arranged that the wheels and shafts can be readily taken off and replaced in such positions as to be convenient for transport.

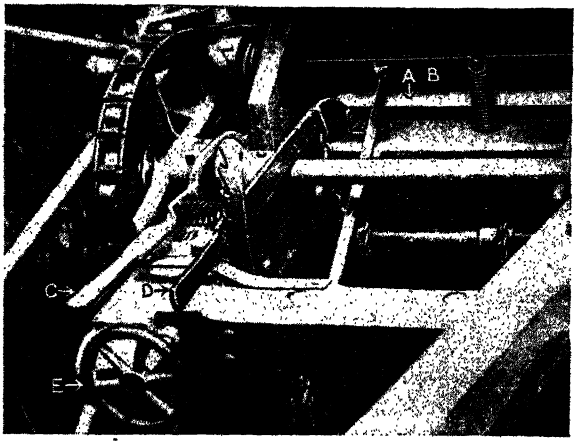

FIG. 3.—Back view showing mechanism.

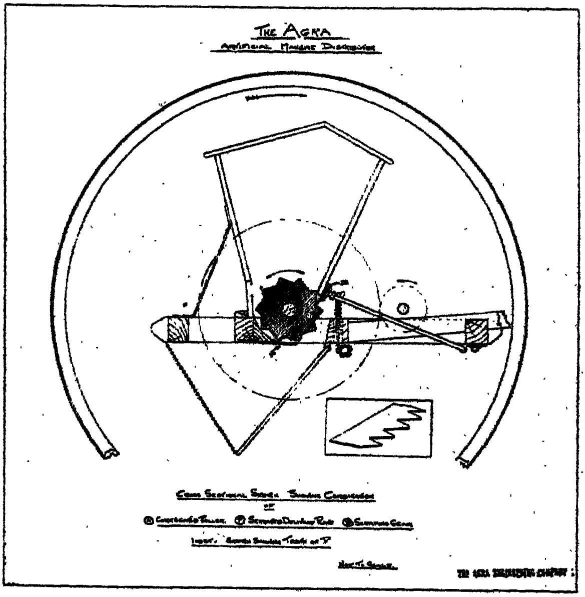
THE AGRA
Artificial Manure Distributor
Cross Sectional Sketch Showing Construction

FIG. 4.—Cross-section.

No. 468. *Gate Fastener, Perry's Patent*, by Gloucester Incubator Company, Woodchester Mills, Stroud.

This is a very simple yet excellent improvement on the vertical bar type of fastener. That part of the bar which engages the catch is made segmental instead of straight and with a radius equal to the distance from the foot of the hanging post to the catch. By this means should the hanging post lean

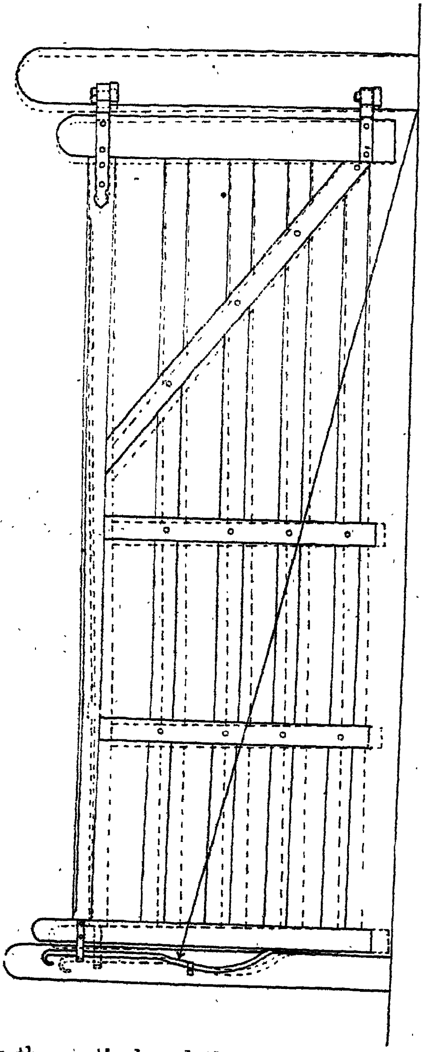

FIG. 5.—Gate Fastener, Perry's Patent.

forward from the vertical and the gate drop, the parts of the vertical bar remain in the same relative position to the catch, so that it does not become jammed, and the gate can always be easily opened.

No. 645. *Depth-Controlling Device and Transport Arrangement for a Disc Harrow*, by J. W. Proctor & Company, Limited, Cestro Works, Chester Street, Chesterfield, Derbyshire.

The new depth-controlling device and transport arrangement applied to this implement is one which will add much to the convenience of the machine, especially in transport.

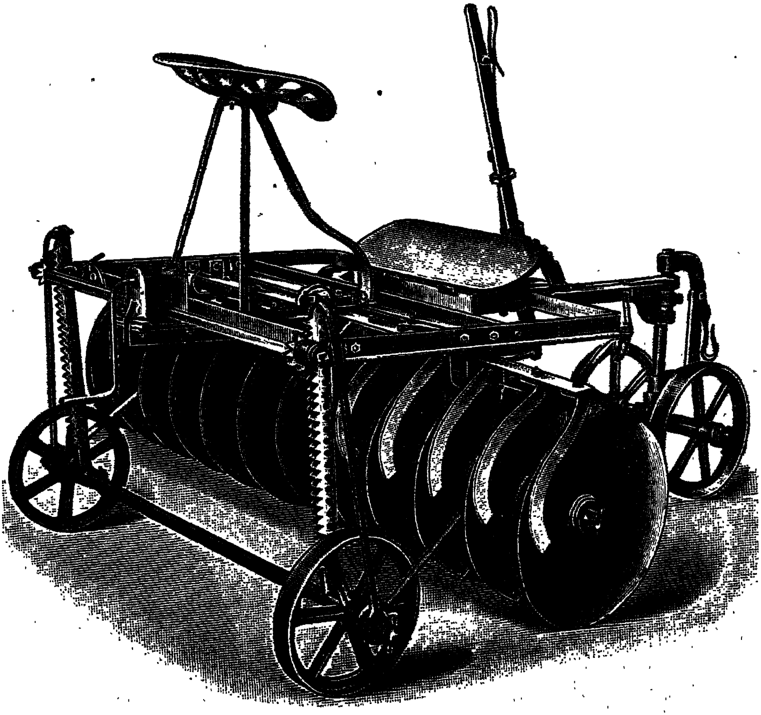

FIG. 6.—Depth-Controlling Device and Transport Arrangement for Disc Harrow.

A pair of road wheels running on the ends of a horizontal shaft are carried by two strong vertical racks; these engage in two pinions actuated by a handle and worm wheel attached to the back part of the frame.

The road wheels can thus be readily lowered so as to raise the discs well clear of the ground, and they may also be used to regulate the depth of the discs when in use.

No. 1308. *Combination Valve-Eyelet and Water-Sprayer with Adjustable Single Lever Lid Fastener for Butter Churn*, Llewellin's Royal Prize End-Over, L4, by G. Llewellin & Son, Haverfordwest.

This is an excellent improvement. The eyelet and valve are made in one. By pressing down the metal rim of the eyelet the valve is opened, and similarly while pressing down the same rim water poured into the eyelet is sprayed around the sides of the churn. The valve is kept closed by means of a spring, and the whole fitting, which is made of much larger size than the usual valve, is easily removed for cleaning.

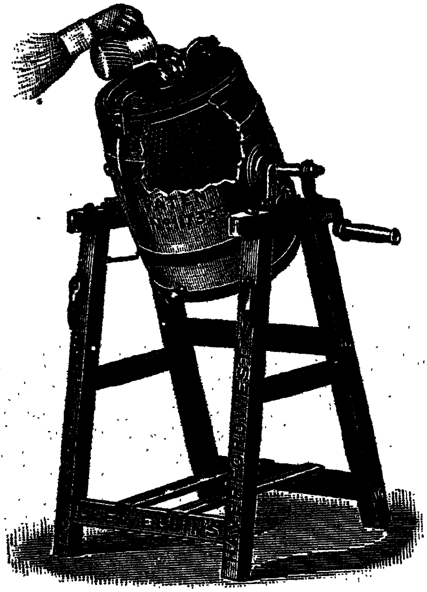

FIG. 7.—Combination Valve-Eyelet and Water-Sprayer, &c., for Butter Churn.

The value of the spraying device in rendering it unnecessary to remove the lid when adding the breaking water will be thoroughly appreciated by Dairy workers; it will effect a saving of time, and the exhibitors further claim avoidance of loss of cream and butter as well as deterioration of colour and grain by exposure to the atmosphere at this critical stage.

The single lever fastener is good in pattern and has the advantage of being adjustable so that any wear of the rim of the churn or shrinkage of the rubber ring can be compensated for, and the secure fastening of the churn lid is always maintained.

No. 1894. *Combined Cultivator for Rigid or Spring Tines*, by W. N. Nicholson & Sons, Limited, Trent Iron Works, Newark, Notts.

This is a strong and serviceable implement, being a rigid tine drag with eleven tines. By the removal of the rigid tines and their replacement by four frames, carrying in all sixteen spring tines, it is converted into a spring tine cultivator. The conversion from the one form of implement to the other is

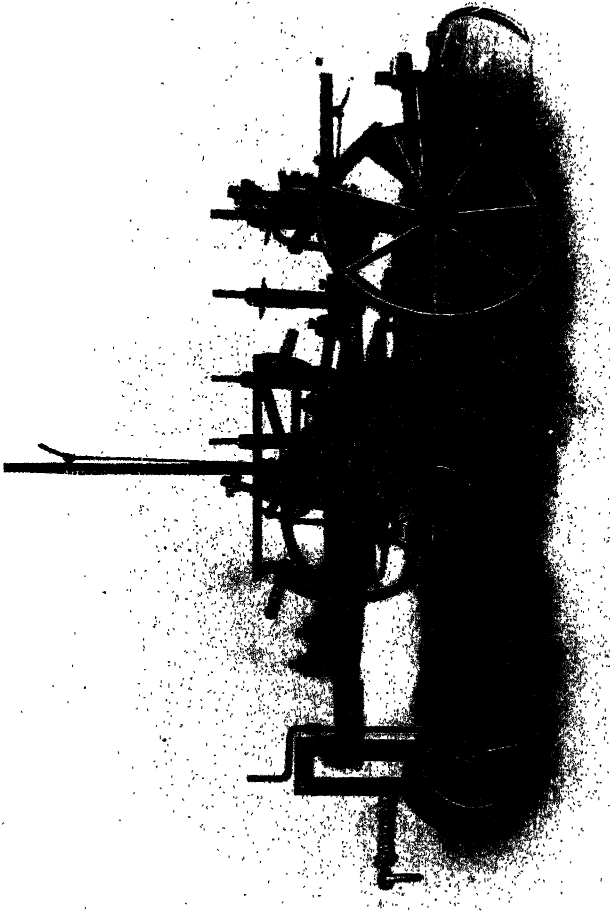

FIG. 8.—Combined Cultivator for Rigid or Spring Tines.

easily effected, and the machine appears to be equally convenient in either form.

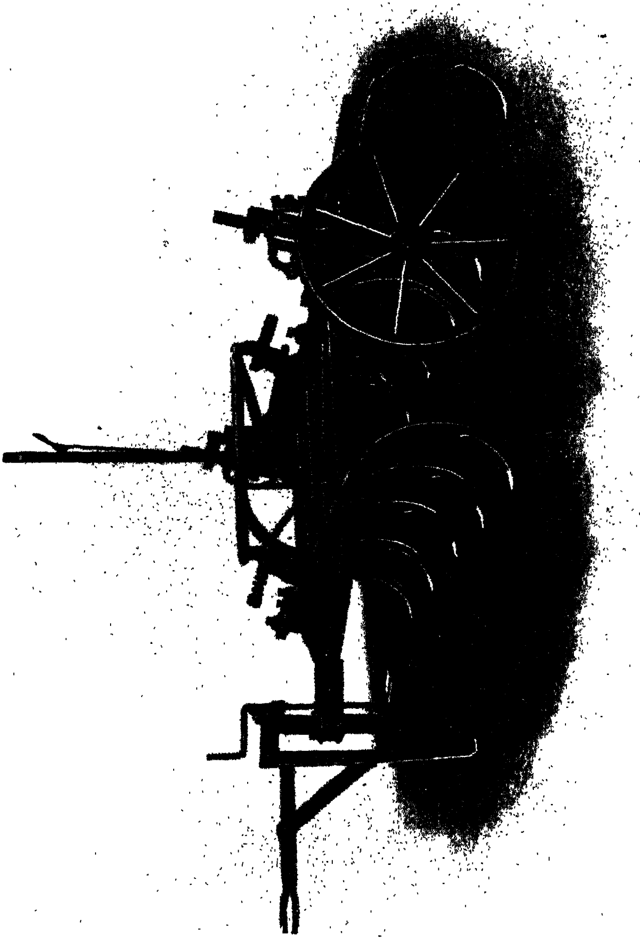

FIG. 9.—Combined Cultivator for Rigid or Spring Tines.

A device is added by means of which each of the frames carrying the spring tines can be forced down from the main frame and held in position to work at varying depths.

No. 2191. *Tractor Ploughs for Two Furrows with Self-Lift and Adjustments for varying widths*, by Ransomes, Sims & Jefferies, Limited, Orwell Works, Ipswich.

This is a well-made implement. The improved self-lift arrangement is sound and practicable. It consists of a toothed rack, which engages with a pinion fixed to the nave of the land wheel. When operated by means of a lever controlled by the driver from the seat of the tractor, the forward motion

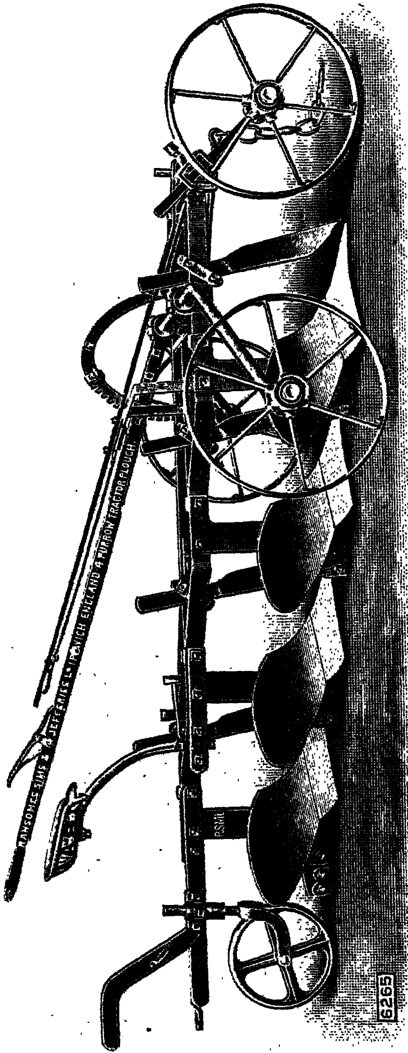
RANSOMES SIMS & JEFFERIES L° IPSWICH ENGLAND 4 FURROW TRACTOR PLOUGH
RSML
6265

FIG. 10.—Two-furrow Self-lift Tractor Plough.

causes the plough to climb gradually out of work, and it is held in its raised position until released.

The various adjustments for width and depth are well arranged and easily applied.

No. 2318. *Improved Gear on Combined Swath Turner and Side Rake*, by Blackstone & Co., Ltd., Stamford.

Already a first-rate implement, Messrs. Blackstone & Co.'s Combined Swath Turner and Side Rake is improved by the always desirable feature of simplification, brought about by the introduction of a cleverly designed semi-universal joint, and the elimination of several working parts obtaining in the former type.

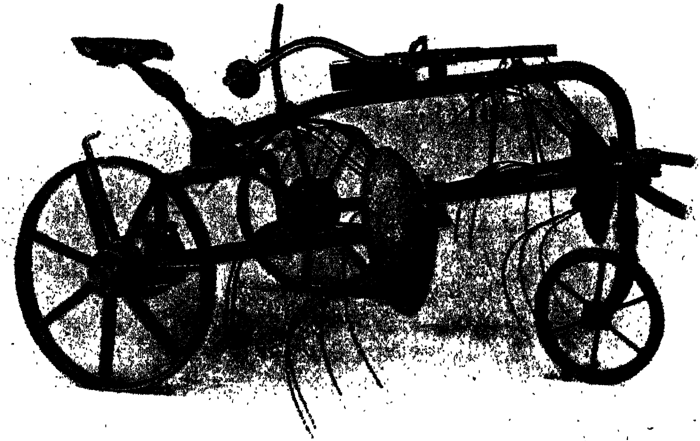

FIG. 11.—Improved Gear on Combined Swath Turner and Side Rake.

The machine was tried in the presence of the Judges under somewhat adverse conditions, but did its work in a perfectly satisfactory manner.

No. 3170. *Hay Loader, New Patent, with Three-throw Cranks*, by Bamfords, Limited, Leighton Iron Works, Uttoxeter.

A decided improvement is the result of the introduction of a triple three-throw crank instead of the usual two-throw cranks. A very nice piece of press forging, the three-throw cranks give a more continuous and steady delivery of the hay.

There is also a neat means of adjusting the movable cratch at the top of the loader, it being only necessary to push it up with a hay fork in order to raise it, and to gently tap a lever with the same tool in order to lower it, a spring catch keeping it in whatever position is desired.

The implement was tried in the presence of the Judges, but the conditions were far from favourable, no freshly-made hay being available. The trussed and pressed hay which was opened out and scattered on the ground was very dry and short, while wet grass which was also tried did not give a very fair test. The Judges were, however, quite satisfied with the performance of the machine.

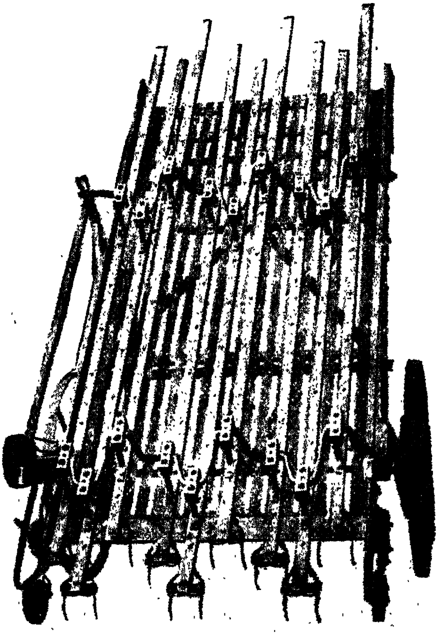

FIG. 12.—New Patent Hay-Loader, with Three-throw Cranks.

No. 3294. *Patent Compensating Arrangement on Anti-balance Steam Plough*, by J. & H. McLaren, Ltd., Midland Engine Works, Leeds.

This remarkably clever contrivance is the work of Mr. Henry McLaren, who is to be congratulated upon the production of such a well thought out device for overcoming a serious drawback inherent in large steam ploughs. Users of steam ploughs, and especially of the largest sizes, are aware of the difficulty of tilting the plough at the end of its run and of the excessive labour which this involves. Mr. McLaren's invention makes it easy for a man to do this with one hand.

The object to be attained is to temporarily do away with the anti-balance condition of the plough. This is achieved by causing the position of the bottom shaft and plough middle to be altered relatively to the wheel centres.

Two steel wire ropes attached to the top of the middle frame of the plough, are carried over two pulleys and are attached at their lower ends to two stirrups, which latter embrace two eccentrics cast on to the sleeve of the bottom shaft. The object of the eccentrics is to take up a certain amount of slack in these ropes as the position of the bottom shaft changes.

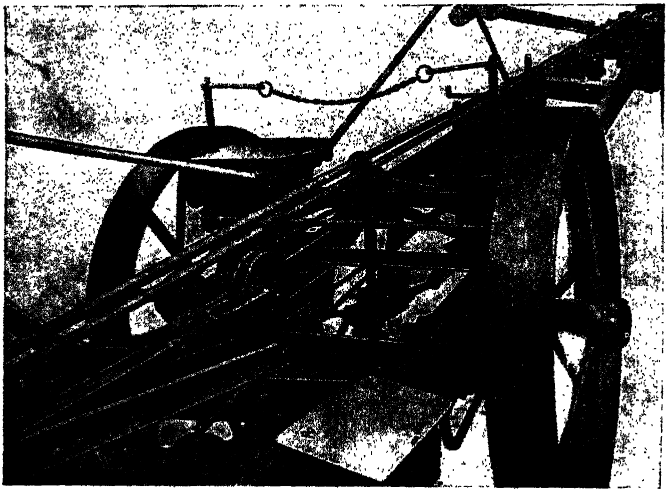

FIG. 13.—Patent Compensation Arrangement on Anti-Balance Steam Plough.

The plough middle and wheels are moved in the frame by the pull of the hauling rope when reversing. The preponderance of weight is thus transferred from that end of the plough which is in the ground to the other end, which can then, as stated above, be easily pulled down by one hand. A further pull on the hauling rope leaves the preponderance of weight on the end of the plough now in its turn on the ground, and the anti-balance is restored. In a position midway between the above the plough stands perfectly balanced.

OTHER NEW IMPLEMENTS.

No. 221. *Improved Calf Feeder*, by Abbott, Field & Co., Ltd., 106, York Road, Lambeth, London, S.E. 1.

By means of this contrivance a calf is enabled to suck its food in a natural way through an india-rubber teat.

The construction consists of a small bucket supported on a swing bracket which can be fixed to a wall or post. There is an outlet in the centre of the base of the bucket to which the teat is attached, and a small adjustable valve regulates the flow of milk, and prevents waste.

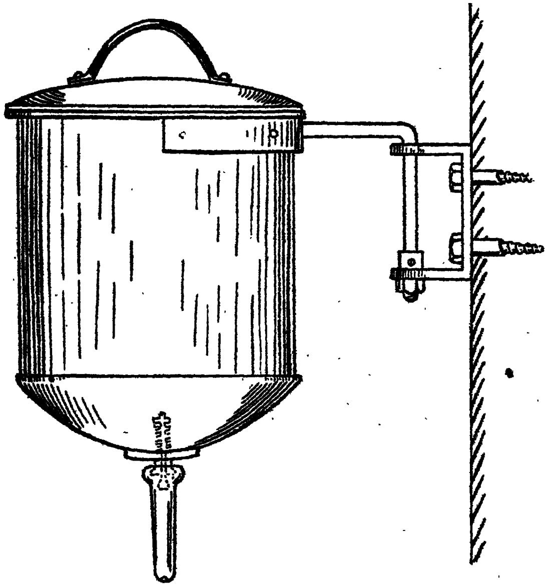

FIG. 14.—Improved Calf Feeder.

No. 234. *Milk Cleanser*, Perfect Dairy Machines, Ltd., 105, Middle Abbey Street, Dublin. Manufactured by De Danske Mejeriers Maskinfabrik, Kolding, Denmark.

This is a power machine of centrifugal type for which the makers claim that, while removing impurities foreign to new milk, it does not cause any separation of the cream. Its capacity is stated to be 1,000 gallons per hour.

No. 235. Here is also shown a *Regenerative Heater and Pasteurizer*, manufactured by Fredricksburg Metalvarefabrik, Copenhagen.

The heat is provided by steam, and the milk is passed between concentric metal jackets raised to a temperature of 185° F. and cooled to 120° F. The milk passes in a continuous flow through the apparatus, and it should be noted that no sooner has it reached the maximum temperature above stated than its cooling commences. The makers claim, however, that this is sufficient to destroy all tubercle germs. The capacity of the Pasteurizer shown is 800 gallons per hour, and it is made in sizes from 100 to 2,000 gallons per hour.

No. 283. *Cream Separator*, "*Wolseley* 30," by Wolseley Sheep Shearing Machine Company, Ltd., Sydney Works, Alma Street, Aston, Birmingham.

The feature of this separator is that the front plate of the gear chamber being held in position by wing nuts is very easily removed for cleaning or repair.

No. 305. *Potato Raiser*, by David Wilson, Implement Works, East Linton, Prestonkirk, N.B.

In this machine the tubers and soil, raised by a wide share in the manner common to many other potato raisers, are delivered on to a shaking fork, the tines of which point to the rear of the machine. It is claimed that no tubers are buried and that they are all left on the surface immediately behind the machine.

No. 462. *Farmyard Manure Distributor*. The James Clay (Wellington) Ltd., Wellington, Salop.

This is a four-wheeled cart with a flat shallow body, along the floor of which chains travel for the purpose of drawing the manure against the distributing rollers which revolve at the back of the cart. It is claimed that the manure is thoroughly broken up and distributed evenly on the land.

Remembering the failure of somewhat similar machines, which were tried at Carlisle in 1902, a word of caution may be given that only well rotted manure should be used in such machines.

No. 467. *Double Incubator*. Gloucester Incubator Company, Woodchester Mills, Stroud.

This is simply one incubator placed on the top of another, the upper one being heated by the waste heat from the one patent heater which heats the lower one, it being claimed by the inventor that no more oil or gas is consumed for heating the two incubators than for one.

No. 647. *Mechanical Ploughs*. Motes' Man Power Plough and Implement Company, Poulton-le-Fylde, Lancs.

These are intended for use on small holdings and allotments. They are represented by two types, one obtaining its traction by means of a caterpillar working directly behind the share and in the furrow; the other secures its draught by means of a cable anchored to one end of the plot and which is wound on to a drum. They are both actuated by a reciprocating lever worked by hand or by a small motor. If the price is moderate, the progress not too slow and the power required not too great, these should prove to be very useful little implements, and we hope to see them in a more complete form at the next Royal Show.

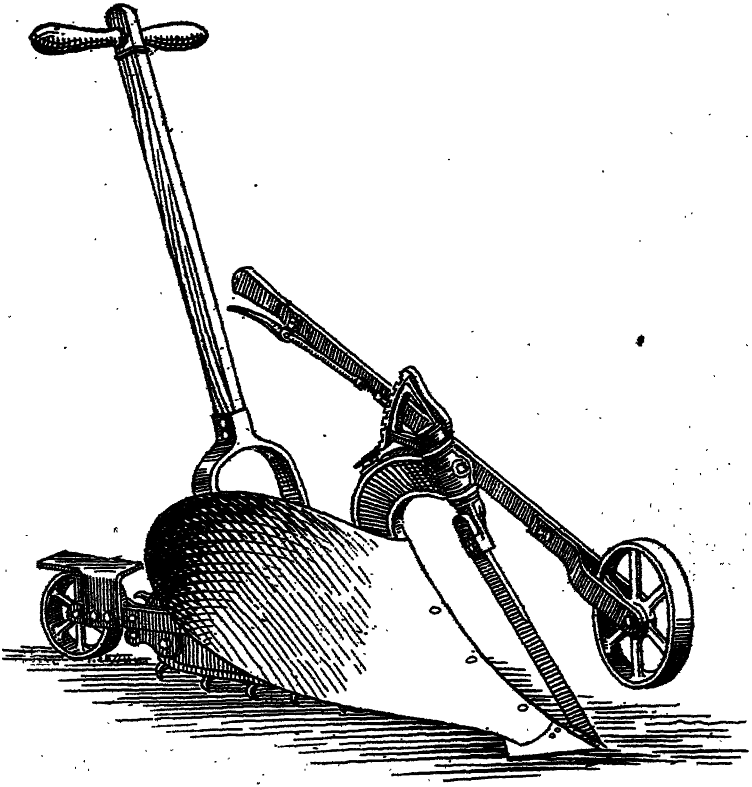

FIG. 15.—Motes' Man Power Mechanical Plough.

No. 654. *Patent Detachable Mouthpiece for Chaff-cutters.* Hall & Co., Agricultural Engineers, Matlock, Derbyshire.

This provides a ready means of renewing the worn face of the mouthpiece against which the knives cut. The suggestion that the detachable piece of cast steel should be re-faced on an ordinary grindstone is impracticable—the attempt would only need to be made once to be abandoned—but the replacement of the worn part by a new one at a trifling cost would be a decided convenience.

No. 705. *"Santler" One-way Reversible 25-H.P. Motor Plough.* C. Santler & Co., Malvernia Works, Malvern Link.

This is the form of motor plough which we hope to see largely developed in the near future. It has distinct advantages over one which has to be turned round at the headlands and over a tractor drawing a separate plough.

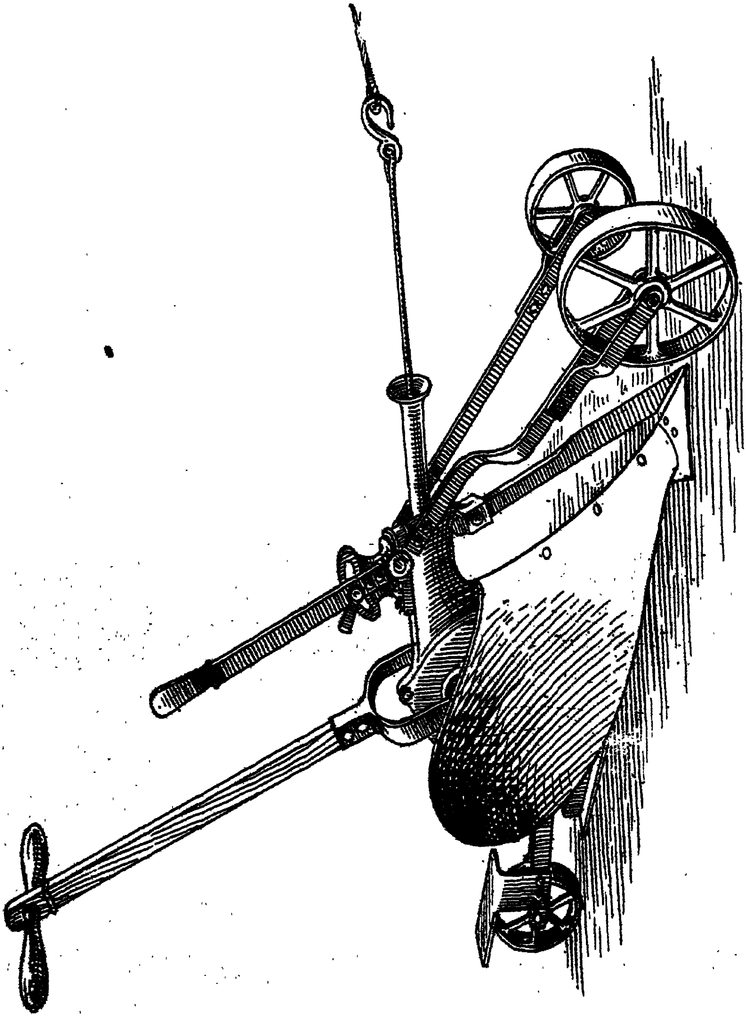

FIG. 16.—Motes' Man Power Mechanical Plough.

The features of the Santler motor plough are that there is no turning. The headlands are reduced to 4 ft. on three sides and none on the fourth. The wheel travelling in the furrow is furnished with spikes for breaking up the subsoil. The plough is very readily detachable, leaving the engine available as a tractor or stationary engine. It has a two-cylinder vertical engine worked with paraffin ; two speeds forward and two reverse, 3½ and 6½ miles per hour.

The performance of this implement at the forthcoming tractor trials, for which we hope to see it entered, will be watched with interest.

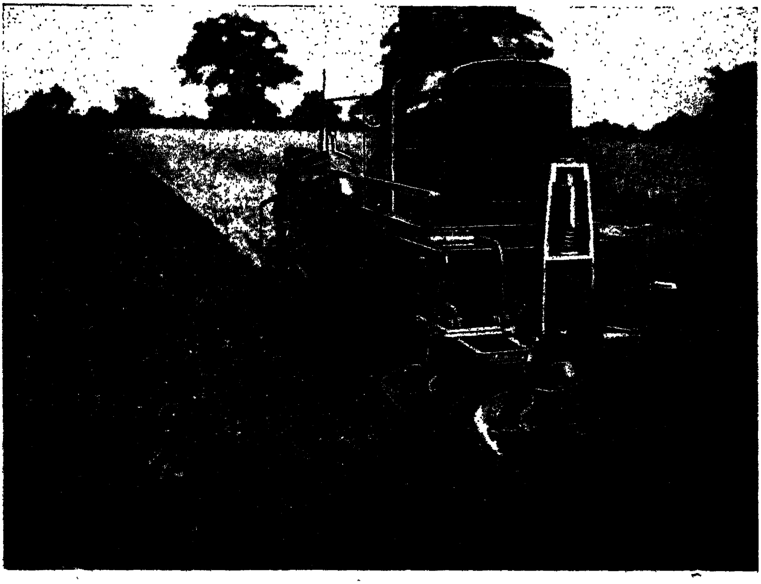

FIG. 17.—"Santler" One-way Reversible Motor Plough.

No. 1238. *Pasteurizer, "Simplex," Long Distance Flow.* Dairy Supply Co., Ltd., Museum Street, London, W.C.1.

This is a large plant at a large price (1,750*l.*), intended to treat 1,200 gallons per hour. The milk, in passing through the machine in a continuous flow, is stated to be maintained at a temperature of 140° F. for half an hour, thereby destroying all deleterious germs without in any way injuring the milk. It is further claimed that owing to the low temperature there is no scalded or burnt flavour, that the whole process being carried out in closed conduits the milk is protected from exposure to the air or re-contamination, and that there is no evaporation loss in heating.

No. 1239. *Special Hygienic Milking Pail, "Ben Davies."*

This pail has a fixed domed cover with an opening at one side only of sufficient size for milking into and for cleaning. By the use of this pail the milk is as effectually protected from dirt falling into it as is possible except by mechanical milking. Price, 21*s.*

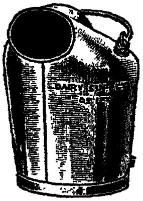

FIG. 18.—"Ben Davies" Hygienic Milking Pail.

No. 1386. *Artificial Manure Distributor.* Alexander Jack & Sons, Ltd., Agricultural Implement Works, Maybole, Ayrshire, Scotland.

This is a small accessory which can be attached to any ordinary drill or ridging plough. It delivers the manure into the bottom of the furrow.

No. 1454. *Drainage Excavator,* "*Revolt.*" Maskin A. B. Revolt, Orebro, Sweden.

This is a novelty in the shape of an implement for cutting trenches for laying land drain pipes. A pointed share delivers

FIG. 19.—Wallworth's Potato Sorter.

the soil on to an endless band elevator from which it is thrown down beside the trench.

Made in two sizes, the smaller requires two horses and two men; the larger four horses and three men.

The ground has to be traversed a number of times before the trench is of sufficient depth. No opinion can be formed of the possibilities of this machine in working and in economy of labour without trial under various conditions.

No. 1477. *Potato Sorter.* Henry Wallworth, Tytherington Old Hall, near Macclesfield.

The machine manufactured by Ridgeway Brothers, Macclesfield, comprises two or three riddles of different sized mesh superimposed one above the other, which discharge at opposite sides and are hinged together to permit the upper ones being tilted to discharge the contents.

The riddles are mounted on an open oscillating frame carried by means of depending arms on a pair of cranked bars which give a parallel easy swinging motion to the riddles.

The machine, which is of convenient construction and requires no great effort to use, is also suitable for riddling sand, gravel, or cinders.

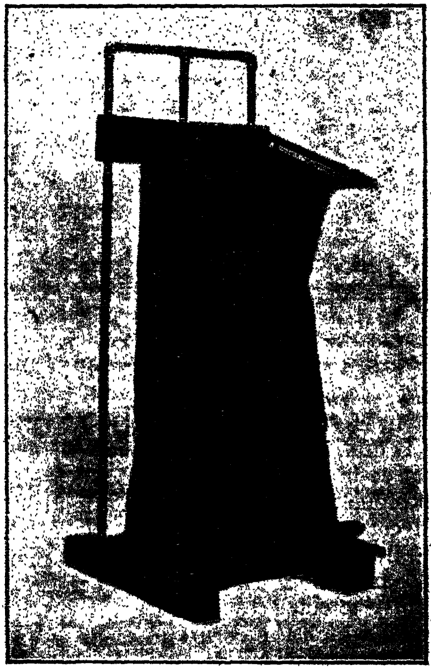

FIG. 20.—Wallworth's Sack Holder.

No. 1479. *Sack Holder.* This is a very handy sack holder, comprising a frame of rectangular construction of flat metal bars with four hooks, two on each bar, to which the sack is attached. Two hooks are stationary and two adjustable. The holder may be attached to a wall, to a potato sorter or other machine.

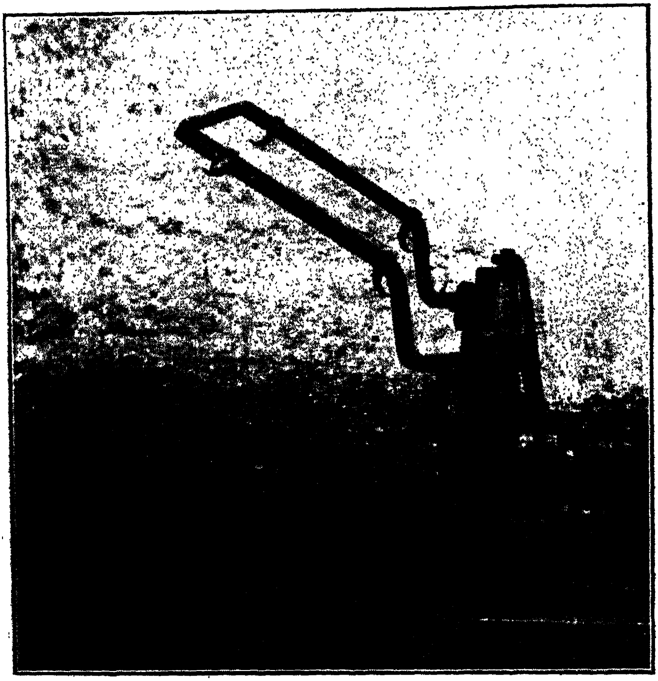

FIG. 21.—Wallworth's Sack Holder.

No. 1792. *Threshing Machine.* N. V. Machinefabriek "De Pol," Zutphen, Holland.

This machine is of somewhat different type from those we are accustomed to see in this country and for which is claimed "simplicity of design, few moving parts, small dimensions, low weight, high capacity and facility of transport."

It has a 6 ft. 4 in. drum, but the machine is compact and smaller than other machines with shorter drums. Separation of the chaff is mainly effected by a fan driving air through a cylindrical trough in which the corn and chaff is energetically whirled up by a stirring shaft bearing arms and slanting blades, while a helical conveyor carries the grain in the opposite direction delivering it to the riddles and awner, thence in two qualities to sacks.

The arrival of this exhibit was delayed through difficulties of transport and it reached the Showyard late through no fault of the exhibitor, so that it could not be tried in any way.

The Judges therefore were unable to form any definite opinion as to the merits claimed, but recommended that permission be granted for it to be entered again next year as a new implement, when it is hoped an opportunity may be afforded of testing its merits. Price 225*l.* and 175*l.*

No. 1937. *Dairy Plant*, "*Baltic.*" The Aktiebolaget Baltic, Stockholm. Sole agents, the Dairy Outfit Company, Ltd., 251—255, Pentonville Road, King's Cross, N.1.

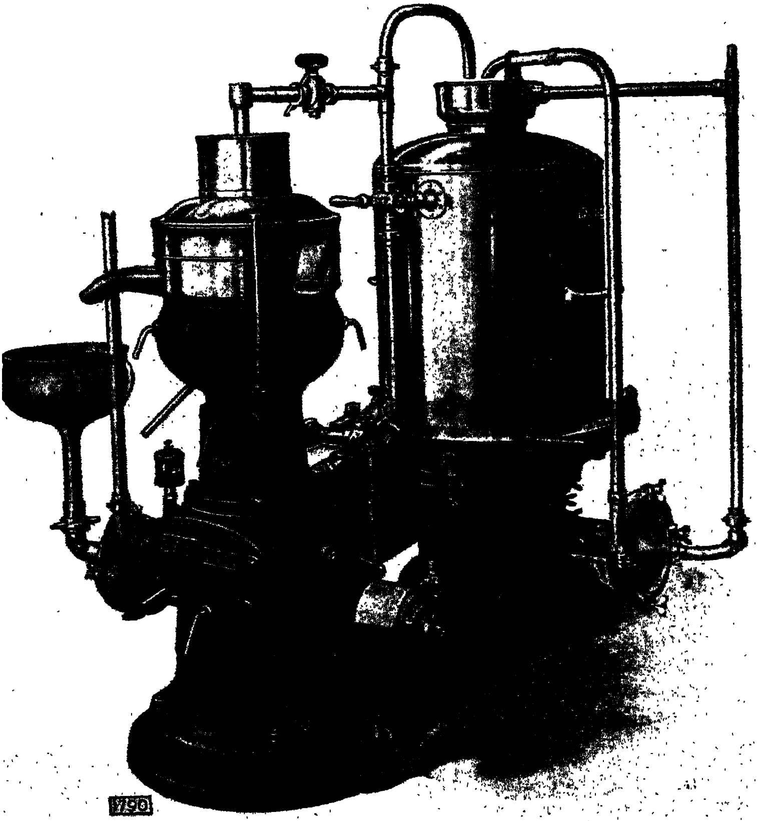

FIG. 22.—Dairy Plant, "Baltic."

This is a very compact, well-designed plant, comprising a Steam Turbine driving a Cream Separator, and Milk Pasteurizer, all on one base. The Turbine Motor can also be used to drive, by belt, at the same time, combined churn and butter workers, water pumps, &c. The pasteurizer is of the vertical type with concentric cylinders, one of which is caused to rotate slowly in order to slightly agitate the milk while it flows through the pasteurizing chamber.

The milk is heated to a temperature of about 185° F., and is cooled to a temperature of 130° F. It is delivered direct into the separator or to an ordinary milk cooler, and the cream is further cooled in the same manner. In this instance, as in other similar pasteurizing plants, it is claimed that the very short exposure to the maximum and somewhat high temperature is sufficient to destroy tuberculous and other dangerous bacilli, and that it does so as effectually as a prolonged exposure to a somewhat lower temperature. This is a question we should like to see decided by actual tests.

A weak point in a plant otherwise excellent is that in common with others of a similar type the final cooling of the milk or cream is done by what we may fairly describe as the ordinary crude form of cooler by which the milk in a thin film receives the fullest exposure to the air.

After the care which is taken in pasteurizing milk and in protecting it from contact with the air during the process, it strikes one as more or less an undoing of the process to cool it in the manner described. We are aware, of course, that while in this, the common method of cooling, there is a certain loss by evaporation, the cooling effect of that evaporation is of material assistance.

We look forward, however, to seeing pasteurizing plants improved in the matter of final cooling.

No. 1974. *Orchard Plough.* E. H. Bentall & Company, Ltd., Heybridge, Maldon, Essex.

This is a light plough designed to enable ploughing to be more conveniently done in orchards. The handles are so adjustable that they can be fixed in a position at an angle to the body of the plough while the draught is arranged in a similar manner. This enables the horse to walk more or less outside the extending branches of the fruit trees, and the ploughman to do the same, while at the same time guiding the plough close up to the trees.

No. 1975. *General Purpose Steel Plough.* In this plough cheapness and simplicity of construction have been arrived at by using straight lengths of standard sections of rolled steel and avoiding curved parts involving smith's work.

No. 1976. *Grinding Mill.* This is a light and strong little mill well adapted for Colonial use. It is fitted with a safety device whereby if any stone or hard substance is by accident put into the mill the extra pressure on the rollers causes the breaking of a wooden pin so arranged as to relieve the shock and save the machine from damage.

Nos. 2058 and 2059. *Blacker's Patent Belt-driven Strikers.* Blacker, Limited, Stayley Ironworks, Stalybridge.

The power driven strikers here exhibited do not come under the category of Agricultural Implements, being intended for large workshops where they are commonly employed.

No. 2061. A *Foot Hammer* is, however, a tool which would be useful in any blacksmith's shop where it would do the work of a striker.

No. 2133. *Oil Engine.* The Hamworthy Engineering Company, Ltd., Poole, Dorset. This engine has two or three features of interest. It is governed by an eccentric which varies the stroke of the fuel-injecting pump, and it has a vaporiser with a curved impinging surface for the fuel jet whereby it is claimed the oil is very effectually broken up and intimately mixed with its due proportion of air.

The most important improvement, however, is in the construction of the main bearings which are in the form of plain brass sleeves. A free ring or neck brass is introduced in the middle of the bearing which fulfils a very useful purpose in that it prevents air and oil from being blown through the bearing by air pressure in the crank chamber.

No. 2433. *Electric Generating Set* "Lyon A.B.C." Arthur Lyon & Wrench, Ltd., 36 Victoria Street, Westminster, London, S.W.1.

This is a very compact and handy electric generating set, designed especially for portability. It is self-contained, and consists of a petrol driven engine-dynamo combination with switchgear, giving an output of 2 kilowatts, equivalent to 100 16 C.P. metal filament lamps. The whole can be easily lifted and carried by two men by means of a couple of carrying rods which slip through rings at either side of the base plate.

A very useful arrangement for temporary lighting purposes or for cases of emergency.

Nos. 2432 and 2434. These two stationary forms of "Lyon-Brotherhood" Generating Sets are also compact and convenient when a small plant is required for lighting or power supply.

Nos. 2478—2481. *Tractor Unit.* The "Eros," and Chassis Adapter, &c. Morris, Russell & Co., Ltd., 163–165 Great Portland Street, London, W.1.

To those who have a Ford car and care to use it for purposes other than as a personal conveyance the exhibit was of interest.

Attachments are offered whereby the car can be converted into a tractor capable of pulling a two-furrow plough and other agricultural implements. It can be reconstructed into a touring car in twenty minutes. The trailers, designed for use with the same or other cars, will also be useful, and the chassis adapter converts an ordinary Ford car into a 1-ton commercial vehicle with a speed of 15 miles per hour, fully loaded.

No. 2515. *Provender, Corn, &c., Automatic Weighers.* Samuel Hanning Kettle, Oldfield Road, Salford, Manchester.

This automatic weighing machine for all kinds of provender appears to be a well-designed and soundly constructed apparatus. The exhibitor would have more fully convinced those who visited his Stand of the capabilities and efficient working of his

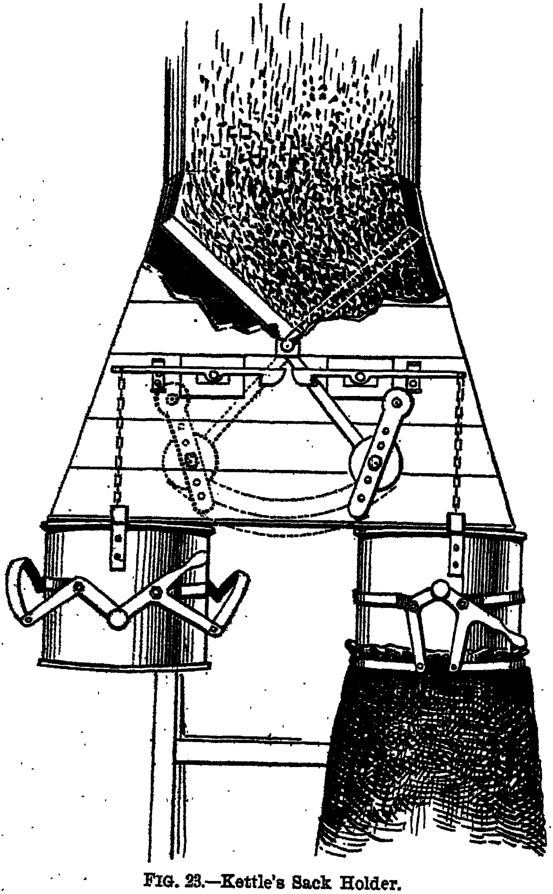

FIG. 23.—Kettle's Sack Holder.

machine had he demonstrated its working with a few sacks of provender rather than empty.

No. 2516. *Sack Holder.* This sack holder appears to be a very good one. It grips the sack round a metal rim by means of two segmental bars quickly brought into position by a pair of linked levers, and having no hooks to tear the sack.

No. 2695. *Power Driven Potato Sorter.* J. B. Edlington & Co., Ltd., Phœnix Ironworks, Gainsborough.

This is a convenient self-contained power driven machine, mounted on travelling wheels for transport in fields. It is fitted with sorting and bagging elevators, and is driven by a small portable engine mounted on the frame of the machine. A farmer having such an engine could use it with this machine without difficulty.

No. 3052. *Potato Planter,* The "Albion." Harrison, McGregor & Co., Ltd., Albion Iron Works, Leigh, Lancashire.

This potato planter is specially adapted for sowing sprouted potatoes. The tubers are fed by hand into a conveyor from a tray carried on the machine, the operator riding on a seat on the machine.

No. 3171. *Horse Rake, New Patent.* Bamfords, Limited, Leighton Iron Works, Uttoxeter.

Messrs. Bamfords' Horse Rake leaves nothing to be desired in a strong, well made, and at the same time, simple rake.

MISCELLANEOUS EXHIBITS.

No. 162. *Stagg Patent "U" Type Wheel.* The Stagg Patent Wheel Company, Ltd., Norwood Road, Herne Hill, London, S.E. 24.

The Stagg Patent "U" Type Wheel is suitable for vehicles, driving pulleys, and many other purposes. The spokes are made of wood bent to the shape of a U, each piece forming two spokes, the centre or bent portion fitting into the cast steel nave or hub, in which are formed semicircular recesses, while the outer ends are mortised into the felloes. Cover plates on either side and bolted together keep the spokes in place. The arrangement is calculated to make a wheel of great strength, combined with resiliency and of simple construction.

No. 704. *The "Once Over" Tiller.* Melchior, Armstrong, and Dessau (London) Limited, 14, Great Marlborough Street, London, W. 1. Manufactured by the Scientific Farming Machinery Co., Minneapolis, Minnesota, U.S.A.

This is an implement of no small interest, and one which we should have liked to have seen working. It comprises a digging plough on which is mounted a rotor worked by a small 6-8 h.p. engine also carried on the body of the plough. The rotor consists of a vertical shaft on which are mounted a number of curved blades spaced at will at greater or lesser distances apart. The tiller is pulled either by horses or by a tractor. The rotor stands in an upright position at the right-hand side of the mold boards, with its bladed part (the tilling end) to the rear of the share and beside the mold board. It can be geared to any speed from 400 to 600 revolutions per minute.

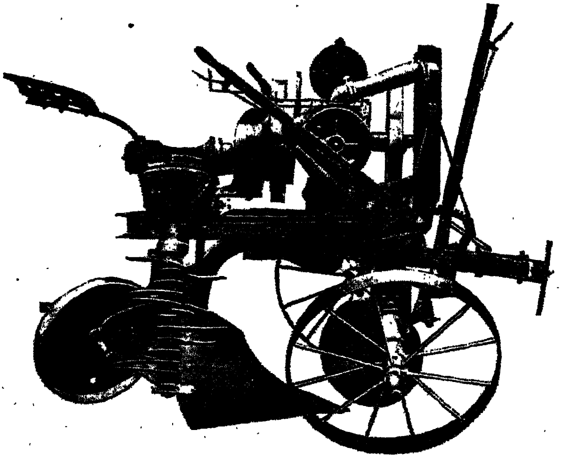

FIG. 24.—The "Once Over" Tiller.

It is claimed that the rotor driven at this high speed forces the whirling steel blades into the furrow slice as it starts to fall from the mold board, thoroughly pulverising the whole mass of soil turned up by the plough share. All weeds, grass, roots, manure and other surface litter are torn up shredded into small pieces, evenly mixed with the pulverised soil.

Thus, it is stated, the machine in one operation produces a perfect seed bed which cannot be equalled by the several operations of ploughing, discing, harrowing, rolling, &c. Stones of ordinary size do not interfere with the operation of the tiller, but a stone too large to pass through the rotor simply blocks it and operates a release clutch, or break pin, which prevents damage to the machine. A seed drill, manure distributor or any other implement may be attached to and drawn after the tiller.

By simply removing the blades from the rotor and attaching a belt pulley the engine can be used for chaff-cutting, grinding, sawing and any other purpose for which a small portable engine is available.

This implement is also made as a complete self-propelling tractor in two sizes, one, Mark 6, known as "Princess Pat," carrying one plough and one tiller with seeder, fertilizer, &c., and performing all the various duties of a tractor; the other carrying three tiller units with drill, &c., and suitable for work on a large scale.

The above is what the makers claim for their machine, and which the Judges cannot confirm without trial; they were, however, favourably impressed with what they saw of the machine in the showyard.

Nos. 2064-2068. *Blow Lamps.* The Easilit Blow Lamp Company, Ltd., Elm Tree Road, Stirchley, Birmingham.

To those who have occasion to use a blow lamp for plumbing or painter's work, those shown on the stand will appeal as having several advantages over the ordinary type. They will light with a match in any weather, without the necessity of pouring spirit upon or around the burner, or of heating the lamp by other means. The burner is cleaned by a needle pushed through from inside by means of a knob, so that no separate cleaning needle is necessary. The two regulating knobs are made of non-inflammable and non-conducting material, and it cannot be filled too full.

No. 2167. *Feuerheerd's Patent Pump.* Fielding & Platt, Ltd., Atlas Works, Gloucester.

This was an exhibit of considerable interest. The pump, which was working at the Show, is one of very simple construction and few working parts. It is of rotary form. The illustrations show the construction of the pump almost more clearly than words can describe it. It consists of two elements, two moving parts only, and the casing. The inner element is driven by the spindle in its centre protruding through the casing; it communicates the drive to the outer element, which is held on its own bearing in the casing. The inner element can also have only two projections, and the outer three recesses, or the inner may have four projections engaging in five recesses in the outer, but in the three in four construction the capacity per revolution is stated by the inventor to be proportionately the greatest of all forms, and the gearing parts to be subjected to infinitesimal wear. The water or other liquid to be pumped is admitted through one of the ports in the casing or in the cover and is forced out through the other.

The inventor claims to be able to pump to any head so long as the pump is strong enough and the power available. He also claims for the invention that it is a highly efficient prime mover, both as a rotary steam engine and an internal combustion engine; and, further, he claims a pneumatic motor, for pneumatic tools, a blower, a compressor, a vacuum pump, a liquid all-speed gearing, a hydraulic brake, a differential gearing, a water motor, and, in fact, a fluid pressure engine.

It is to be hoped that we shall on a future occasion see the realisation of these several claims demonstrated in actual working and proved by practical tests.

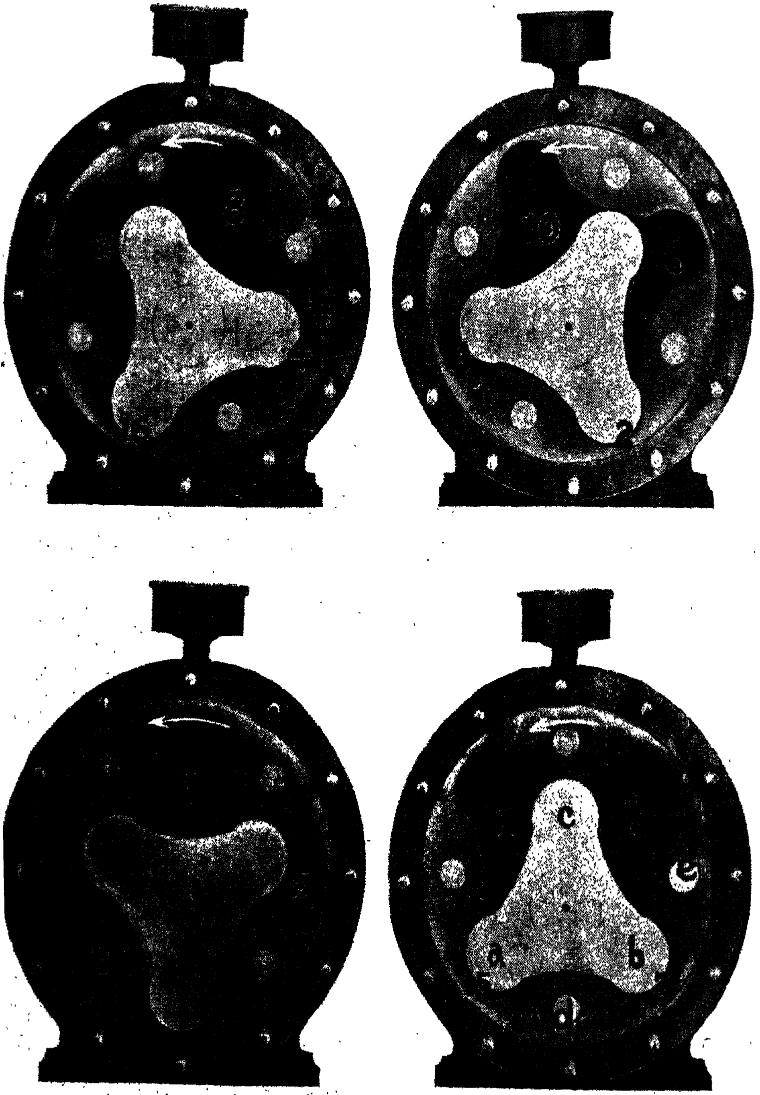

FIG. 25.—Feuerheerd's Patent Pump.

This pump was not entered as a new implement because the makers were uncertain of being able to have it ready in time for the Show, at which, as a matter of fact, it arrived late.

Nos. 3587—3591. The Concrete Utilities Bureau, 6 Lloyd's Avenue, London, E.C.3.

This was a very fine exhibit, a large open-sided building of concrete blocks, in and around which was a remarkably interesting series of examples of the many uses to which concrete, and especially reinforced concrete, can be economically applied.

Within the building were to be seen very instructive demonstrations of the actual building of a cylindrical reinforced concrete silo, of the making of concrete blocks, fencing posts, small gates, water cisterns, troughs and other useful things. There were examples of concrete window and door frames, stairs, cowstalls and mangers, a pigsty entirely constructed of concrete and said to cost *5l.*—less than half what it would cost at the present time to build of oak framing and rough slabbing.

Some reinforced concrete water pipes were exhibited. These have advantages over iron in that they should cost less and are unaffected by the action of water, whereas cast iron pipes become encrusted with nodules of oxide of iron, which not only materially increase the friction of the water in the pipe, but also discolour the water. Garden frames, including the lights, were made entirely of concrete, and machines for mixing concrete and for making blocks, slabs, &c., were also to be seen working.

There were, outside the building, examples of the many uses made of concrete by the various railway companies:—Signal posts, gate and fencing posts, sleepers, platforms, station name boards with the name in black concrete (rendering painting unnecessary), and many other items.

Among the samples exhibited were some of very high quality. It is surprising what a perfect finish can be given to such things when sufficient care is taken. An example of a carved capital was worthy of notice as showing what is possible from an artistic point of view. The capital was of course cast or moulded, but finished by hand, and was really indistinguishable from a very good piece of carved stone work.

The wooden moulds required for making such things as concrete fencing posts are of simple construction, and where suitable materials can be obtained economical use can often be made of concrete by those responsible for the management of estates and farms.

A word of warning may, however, be not out of place in hat this sort of work cannot be done successfully unless every care is taken in grading and properly mixing the materials and filling the moulds, while dirty and inferior materials for the aggregate are fatal to success.

A most useful set of thirteen pamphlets is published by The Concrete Utilities Bureau. They give full instructions for the proper making and use of concrete, with details of its application to many purposes, from the building of a house, a farm building or a greenhouse, to the making of a fencing post or a drinking trough.

The pamphlets can be had on application to the Bureau.

Nos. 3843, 3844 and 3845. *Farm Buildings Constructed with Asbestos-Cement Building Materials.* Turner Brothers Asbestos Company, Ltd., Rochdale and Trafford Park, Manchester.

This was another interesting exhibit of a building material offering many advantages on the score of portability, rapidity of erection, and neatness of finish both externally and internally. "Turners' Trafford Sheets" and "Trafford Tiles" (asbestos and cement) form the covering of timber-framed structures, and large plain sheets of the same material are used for lining the interior and forming ceilings. No paint or other preservative is required on the exterior, and the interior can be distempered or papered in the usual way.

Built on a brick or concrete foundation, with chimneys of brick masonry or concrete, a very comfortable and durable dwelling can be made with an appearance far superior to corrugated iron and much less susceptible to changes of temperature.

The materials are equally applicable to the lighter class of farm buildings.

No. 3863. *Automatic Pulsator.* The Dairy Supply Company, Ltd., Museum Street, London, W.C.1.

The New Automatic Pulsator for use with the "Amo" Milking Machine is no doubt a decided improvement on the older pattern, and it is claimed that with its use the cows are stripped 50 per cent. cleaner.

In conclusion it may be recorded that there were as usual many very fine exhibits which, while perhaps not on this occasion representing anything actually new, well repaid a visit.

It is impossible to enumerate these, for there were many Stands where one might have spent half an hour or an hour in studying the details of machines and implements of absorbing interest; but it may not be invidious to refer to the exhibit of Messrs. Robinson & Sons, whose working exhibit of milling machinery, with all the wonderful refinements of modern milling and the beautiful and delicate machinery by which the various stages are carried out, was certainly of exceptional interest, as indeed their exhibit has been on previous occasions.

The Judges wish to record their thanks to the Stewards of Implements, the Hon. J. E. Cross and Mr. U. Roland Burke, for the great pains they took to facilitate their work, and to the Society's Consulting Engineer, Mr. F. S. Courtney, for his invaluable help and for the benefit of his ripe experience always so generously given.

WALTER L. BOURKE.

Moneycrower,
Maidenhead.

REPORT OF THE STEWARD OF DAIRYING CARDIFF SHOW, 1919.

MILK YIELD TRIALS (CATTLE, CLASSES 217 to 229.)

THE number of cattle entered for these trials amounted only to 99, of which 71 competed, and these were not so evenly distributed among the various breeds as in previous years. It is unfortunate, when the demand for milk is so great, that one is obliged to record the fact that South Devon and Kerry cattle were not represented, and that only 3 Ayrshires and 2 Dexters put in an appearance.

The conditions and points under which these and the Butter Test trials were conducted were the same as those at the Manchester Show, 1916.

Table I. on pp. 308-10 gives the full particulars of the milk yield classes, with the prizes and commendations awarded.

Table II. on page 311 shows the average results of all the animals competing under their respective breeds. Ten cows were disqualified for giving milk deficient in fat on the average of the two milkings—

2	Shorthorns	out of 14 tested.
3	Lincolnshire Red Shorthorns	„ 4 „
2	Red Polls	„ 7 „
3	Friesians	„ 5 „

and these numbers would have been larger had the disqualifications been based on the milk produced at each milking.

TABLE I.—MILK-YIELD CLASSES AT CARDIFF, 1919.

No. in Catalogue	Exhibitor	Name of cow	Date of birth	Date of last calf	No. of days in milk	Date of last Service	Total milk yield in 24 hours	Average Fat percentage	Points				Awards.
									Milk	Fat per cent. × 4	Lactation	Total	
Class 217		*Shorthorns*		1919			Lb. oz.						
715	R. W. Hobbs & Sons	Hawthorne 9th	Nov. 26, 1910	May 20	37	—	57 8	3·55	57·50	14·20	Nil	71·70	3rd Prize.
716	W. G. Millar	Cowslip Pride	Jan. 5, 1909	May 1	56	—	68 14	3·20	68·87	12·80	1·60	83·27	2nd Prize & Reserve Champion, £5.
718	R. L. Mond	Marian 4th	Mar. 26, 1908	Jan. 9	168	—	39 2	3·13	39·12	12·52	Nil	51·64	—
721	C. & E. Stephenson	Waterloo Lily 4th	Feb. 6, 1910	Apr. 8	79	—	50 10	3·60	50·62	14·40	3·90	68·92	H.C.
723	F. H. Thornton	Dairymaid 6th	Feb. 26, 1910	Mar. 17	101	—	61 14	2·95	61·87	11·80	5·00	78·67	Fat below Standard.
725	Major The Duke of Westminster	Kenilworth Lass	June 10, 1912	June 7	19	—	49 4	2·35	49·25	9·40	Nil	58·65	Fat below Standard.
728	Capt. A. S. Wills.	Duchess of Cranford 3rd	Oct. 29, 1908	May 6	51	—	67 8	4·02	67·50	16·08	1·10	84·68	1st Prize & Champion, £30.
736	W. G. Millar	Cockerham Purity	Feb. 16, 1914	May 4	53	—	53 2	3·65	53·12	14·60	1·30	69·02	H.C.
742	E. Abel Smith	Longhills Leaf	Mar. 27, 1914	May 15	42	—	47 10	3·30	47·62	13·20	·20	61·02	—
744	Capt. A. S. Wills.	Thornby Foggathorpe 2nd	Sept. 11, 1914	June 8	18	—	42 12	4·65	42·75	18·60	Nil	61·35	H.C.
746	Marquis of Zetland	Betsy Grey 2nd.	Apr. 5, 1913	June 1	25	—	44 8	3·08	44·50	12·32	Nil	56·82	—
748	Major Fuller	Countess Thrush	Jan. 4, 1910	May 10	47	—	40 0	3·90	40·00	15·60	·70	56·30	—
761	J. Lucas	Astley Cressida 3rd	Sept. 2, 1916	Apr. 7	80	—	35 0	3·65	35·00	14·60	4·00	53·60	—
762	J. Lucas	Marchioness of Barrington 6th	Oct. 1, 1916	May 10	47	—	40 6	3·20	40·37	12·80	·70	53·87	—
Class 219		*Lincoln Red Shorthorns*											
785	J. Evens & Son	Holton Favourite	Mar., 1911	Apr. 18	69	—	64 6	2·78	64·37	11·12	2·90	78·39	Fat below Standard.
786	J. Evens & Son	Burton Roughy	Mar., 1913	Mar. 6	112	—	47 12	2·75	47·75	11·00	5·00	63·75	Fat below Standard.
791	J. Evens & Son	Burton Cork 15th	Apr. 14, 1913	May 3	54	—	42 14	3·20	42·87	12·80	1·40	57·07	Points not reached.
793	J Evens & Son	Burton Suttie	Mar., 1913	May 29	28	—	54 4	2·70	54·25	10·80	Nil	65·05	Fat below Standard.
Class 220		*Devons*											
933	W. G. Busk	Suffragette 1st	Feb. 1, 1913	May 25	32	—	42 12	3·65	42·75	14·60	Nil	57·35	—
934	W. G. Busk	Wraxall Lucky	1911	June 2	24	—	52 0	3·75	52·00	15·00	Nil	67·00	1st Prize.
935	W. G. Busk	Wynford Baby 3rd	May 1, 1911	May 19	38	—	46 6	3·75	46·37	15·00	Nil	61·37	2nd Prize.
936	J. H. Chick	Compton Clay	Dec. 25, 1909	May 23	34	—	34 14	3·30	34·87	13·20	Nil	48·07	—
937	J. H. Chick	Wynford Label 6th	Nov. 27, 1913	May 2	55	—	33 0	4·02	33·00	16·08	1·50	50·58	—
938	J. H. Chick	Wynford Spark.	Sept. 4, 1916	Apr. 30	57	—	36 2	4·45	36·12	17·80	1·70	55·62	3rd Prize.
Class 222		*Longhorns*											
970	Capt. Cottrell Dormer	Lorna	Jan. 13, 1911	May 6	51	June 18, 1919	37 8	5·05	37·50	20·20	1·10	58·80	1st Prize.
973	W. H. Sale	Arden Cinderella	June 16, 1916	May 23	34	—	39 14	3·48	39·87	13·92	Nil	53·79	2nd Prize.
974	W. H. Sale	Grace 15th	July 4, 1915	May 10	47	—	21 12	4·15	21·75	16·60	·70	39·05	Points not reached.

TABLE I.—MILK-YIELD CLASSES AT CARDIFF, 1919—*continued.*

No. in Catalogue	Exhibitor	Name of cow	Date of birth	Date of last calf	No. of days in milk	Date of last Service	Total milk yield in 24 hours		Average Fat percentage	Points				Awards
										Milk	Fat per cent. × 4	Lactation	Total	
Class 223		*Red Polls*		1919			Lb.	oz.						
1047	Lt.-Col. Sir M. R. Burrell, Bart.	Knepp Baby	Mar. 9, 1915	May 9	48	—	30	10	4·30	30·62	17·20	·80	48·62	—
1048	Lt.-Col. Sir M. R. Burrell, Bart.	Plumstead Prudence	Sept. 24, 1912	Jan. 27	150	Mar. 27, 1919	36	14	3·40	36·87	13·60	11·00	61·47	1st Prize.
1049	Capt. Colmore	Kettleburgh Rose 4th A.	Apr. 15, 1910	May 15	42	—	51	14	2·92	51·87	11·68	·20	63·75	Fat below Standard.
1053	Capt. Richardson	Brightwell Queen	Nov. 15, 1912	Mar. 18	100	May 17, 1919	40	12	3·27	40·75	13·08	6·00	59·83	2nd Prize.
1054	Capt. Richardson	Harefield Princess A	Jan. 22, 1913	May 23	34	—	44	0	3·55	44·00	14·20	Nil	58·20	3rd Prize.
1055	Capt. Richardson	Stoke Daisy	Apr. 7, 1911	Apr. 16	71	May 21, 1919	38	8	4·05	38·50	16·20	3·10	57·80	—
1057	J. Watson	Khaki	Jan. 20, 1913	Apr. 13	74	June 6, 1919	49	12	2·90	49·75	11·60	3·40	64·75	Fat below Standard.
Class 224		*Ayrshires*												
1144	W. Gibson	Auchencloigh Crocus	Apr. 17, 1912	May 25	32	—	51	14	3·22	51·87	12·88	Nil	64·75	2nd Prize.
1146	W. Gibson	Auchencloigh Tibbie	Mar. 20, 1910	Apr. 18	69	—	46	6	3·55	46·37	14·20	2·90	63·47	3rd Prize.
1148	W. Gibson	Moorside Acacia	Apr. 23, 1912	May 20	37	—	55	8	3·51	55·50	14·04	Nil	69·54	1st Prize.
Class 225		*British Friesians*												
1181	J. Bromet	Coombe Ariel	1910	Apr. 9	78	—	58	14	2·97	58·87	11·88	3·80	74·55	Fat below Standard.
1182	A. & J. Brown	Hedge's Pretty Queen	Nov. 5, 1910	June 5	21	—	74	6	2·65	74·37	10·60	Nil	84·97	Fat below Standard.
1183	A. & J. Brown	Hedge's Sweet Buttercup	Oct. 12, 1913	June 7	19	—	70	0	3·28	70·00	13·12	Nil	83·12	1st Prize.
1189	Olympia Agricultural Company	Dunninald Daphne	Jan. 23, 1913	May 10	47	—	93	14	2·80	93·87	11·20	·70	105·77	Fat below Standard
1192	R. Williamson & W. Holland	Hawstead Bluebell	June 21, 1912	May 10	47	—	49	0	3·25	49·00	13·00	·70	62·70	Points not reached.
Class 226		*Jerseys*												
1256	G. Berry	Tenda	July 25, 1915	Mar. 6	112	Apr. 27, 1919	41	4	4·28	41·25	17·12	7·20	65·57	H.C.
1263	W. M. Cazalet	Jolly Berna Lass	July 25, 1910	Mar. 30	88	—	34	14	4·73	34·87	18·92	4·80	58·59	H.C.
1268	Mrs. McIntosh	Gloxalia	Mar. 25, 1911	May 8	49	—	39	14	4·05	39·87	16·20	·90	56·97	—
1269	Major The Hon. H. Pearson	Gannemead 2nd	Nov. 4, 1912	Mar. 17	101	June 9, 1919	55	2	3·75	55·12	15·00	6·10	76·22	1st Prize & Champion, £20; and 10 guineas Royal Jersey Agricultural Society's Prize.
1270	Major The Hon. H. Pearson	Noble's Buttercup	Apr. 13, 1914	Mar. 24	94	June 16, 1919	40	14	5·70	40·87	22·80	5·40	69·07	H.C.
1271	Mrs. Rudd	Meadow Vale Pride	Apr. 1, 1913	Apr. 17	70	—	42	2	4·32	42·12	17·28	3·00	62·40	H.C.
1272	Mrs. Hayes Sadler	Golden Fleece 9th	June 8, 1914	Apr. 4	83	—	47	14	4·60	47·87	18·40	4·30	70·57	3rd Prize.

TABLE I.—MILK-YIELD CLASSES AT CARDIFF, 1919—*continued.*

No. in Catalogue	Exhibitor	Name of cow	Date of birth	Date of last calf	No. of days in milk	Date of last Service	Total milk yield in 24 hours		Average Fat percentage	Points				Awards
										Milk	Fat per cent. × 4	Lactation	Total	
Class 226		*Jerseys—continued*		1919			Lb.	oz.						
1273	Mrs. Hayes Sadler	Hazon Chain	Nov. 28, 1911	Feb. 26	120	May 14, 1919	37	12	5·20	37·75	20·80	8·00	66·55	H.C.
1275	R. Bruce Ward	Ida	Mar. 15, 1914	Feb. 10	136	Apr. 20, 1919	40	4	4·87	40·25	19·48	9·60	69·33	H.C.
1278	R. Bruce Ward	Restful 2nd	July 9, 1911	Apr. 20	67	—	41	8	4·50	41·50	18·00	2·70	62·20	H.C.
1285	Mrs. E. Watts	Doctor's Princess	Aug. 3, 1915	Feb. 28	118	May 17, 1919	36	4	5·02	36·25	20·08	7·80	64·13	H.C.
1286	Mrs. E. Watts	Merry Morn	May 31, 1912	Apr. 1	86	June 16, 1919	43	12	5·92	43·75	23·68	4·60	72·03	2nd Prize & Reserve for Champion, £5.
1287	E. G. Weeks	L'Etacq Daisy 6th	Aug. 12, 1914	May 5	52	—	38	0	4·57	38·00	18·28	1·20	57·48	H.C.
1289	G. Berry	Bilberry	Mar. 16, 1916	Apr. 12	75	—	35	12	5·30	35·75	21·20	3·50	60·45	H.C.
1297	Exors. of G. Murray Smith	Fern's Oxford Laurena	May 8, 1916	May 31	26	—	26	4	5·25	26·25	21·00	Nil	47·25	—
1304	J. E. A. Willis Fleming	Happy Day	May 20, 1917	Apr. 22	65	—	23	8	4·45	23·50	17·80	2·50	43·80	—
1308	E. G. Weeks	L'Etacq Daisy 7th	Jan. 31, 1917	Mar. 10	108	May 25, 1919	31	14	4·70	31·87	18·80	6·80	57·47	H.C.
Class 227		*Guernseys*												
1351	Mrs. R. C. Bainbridge	Trequean Maggie 2nd	Feb. 11, 1913	Nov. 29, '18	209	Jan. 28, 1919	27	4	5·15	27·25	20·60	12·00	59·85	2nd Prize.
1353	W. T. Curtis	Donnington Happy Girl 3rd	Dec. 28, 1911	May 29	28	June 14, 1919	40	2	3·62	40·12	14·48	Nil	54·60	—
1356	A. W. Bailey Hawkins	Gilia of Blunham	Nov. 4, 1911	Mar. 23	95	—	37	0	3·85	37·00	15·40	5·00	57·40	—
1359	Mrs. Jervoise	Fanny du Foulon 22nd	July 3, 1911	Apr. 22	65	July 10, 1919	36	8	4·38	36·50	17·52	2·50	56·52	—
1360	Mrs. W. Howard Palmer	Donata 7th of Warren Wood	Jan. 1, 1913	Apr. 25	62	—	30	8	4·33	30·50	17·32	2·20	50·02	—
1361	Sir J. Remnant, Bart.	Donnington Jane	Nov. 14, 1909	May 1	56	July 19, 1919	42	0	4·72	42·00	18·88	1·60	62·48	1st Prize.
1364	Mrs. R. C. Bainbridge	Elfordleigh Citron 30th	Feb. 11, 1915	June 7	19	—	28	0	5·17	28·00	20·68	Nil	48·68	—
1365	Mrs. R. C. Bainbridge	Elfordleigh Roma	Feb. 11, 1916	June 2	24	—	35	4	4·20	35·25	16·80	Nil	52·05	H.C.
1369	Mrs. W. Howard Palmer	Murrell May Rose	May 1, 1916	May 24	33	—	31	8	3·45	31·50	13·80	Nil	45·30	—
1371	H. F. Plumptre	Butterwort 14th	May 2, 1915	Apr. 26	61	—	41	12	3·80	41·75	15·20	2·10	59·05	3rd Prize.
Class 229		*Dexters*												
1412	Lady Morant	Gort Peach 9th	Feb. 10, 1913	May 15	42	—	34	14	3·35	34·87	13·40	·20	48·27	2nd Prize & Reserve for Champion, £5.
1413	Lady Morant	Harley Penelope	Nov. 12, 1908	Apr. 12	75	June 9, 1919	36	0	3·85	36·00	15·40	3·50	54·90	1st Prize & Champion, £10.

BUTTER TEST (CLASSES 230 & 231.—CATTLE.)

As at Manchester in 1916, the Dairy Shorthorn Association gave special prizes for Shorthorn cows and heifers entered in Class 231. These animals could also compete in the open classes, the prizes for which were given, as in previous years, by the English Jersey Cattle Society. The cattle in the two open classes were weighed on Tuesday evening, June 24, and were milked out on the following day at 5.15 p.m.

The full particulars of the cattle entered in the open classes, with the prizes and awards, are given in Table III., while Table IV. gives the same details with regard to the special Dairy Shorthorn Class. Table VI. gives the average results of the various cows tested under their respective breed headings, the two classes of Shorthorns being shown separately. It will be noticed that the butter ratios in some cases are very high, and it may be a question whether cows with ratios over a certain figure should be eligible for prizes or commendations.

MILKING TRIALS (GOATS).

Twenty-one goats were entered for these trials, four competing in Class 351 for animals that had previously won a first, second or third prize in any milking competition, the remaining 17 being in the novice class. The goats were milked out on Wednesday, June 25, at 5 p.m., the milk of the next 24 hours being taken for the trials.

The prizes were awarded on the same scale of points as at Manchester, the labour entailed in working them out being so heavy that it was impossible to publish the results during the Show week.

Table V. gives the full particulars of the trials and the prizes awarded.

TABLE II.—*Average Results of the Cattle in the Milk Yield Classes.*

No. of cows competing	Breed	Days in milk	Milk	Fat per cent.	Points
			Lb. oz.		
14	Shorthorn	58	49 $13\frac{6}{7}$	3·44	64·99
4	Lincolnshire Red Shorthorn .	65	52 5	2·85	66·06
6	Devon	40	40 $13\frac{2}{3}$	3·82	56·66
3	Longhorn	44	33 $0\frac{2}{3}$	4·17	50·54
7	Red Poll	74	41 $12\frac{4}{7}$	3·49	59·20
3	Ayrshire	46	51 4	3·42	65·92
5	British Friesians . . .	42	69 $3\frac{3}{5}$	2·49	82·22
17	Jersey	85	38 $10\frac{4}{17}$	4·77	62·36
10	Guernsey	65	34 $15\frac{4}{5}$	4·26	54·59
2	Dexter	58	35 7	3·60	51·68

TABLE I.—MILK-YIELD CLASSES AT CARDIFF, 1919—*continued.*

No. in Catalogue	Exhibitor	Name of cow	Date of birth	Date of last calf	No. of days in milk	Date of last Service	Total milk yield in 24 hours		Average Fat percentage	Points				Awards
										Milk	Fat per cent. × 4	Lactation	Total	
							Lb.	oz.						
Class 226		*Jerseys—continued*		1919										
1273	Mrs. Hayes Sadler	Hazon Chain	Nov. 28, 1911	Feb. 26	120	May 14, 1919	37	12	5·20	37·75	20·80	8·00	66·55	H.C.
1275	R. Bruce Ward	Ida	Mar. 15, 1914	Feb. 10	136	Apr. 20, 1919	40	4	4·87	40·25	19·48	9·60	69·33	H.C.
1278	R. Bruce Ward	Restful 2nd	July 9, 1911	Apr. 20	67	—	41	8	4·50	41·50	18·00	2·70	62·20	H.C.
1285	Mrs. E. Watts	Doctor's Princess	Aug. 3, 1915	Feb. 28	118	May 17, 1919	36	4	5·02	36·25	20·08	7·80	64·13	H.C.
1286	Mrs. E. Watts	Merry Morn	May 31, 1912	Apr. 1	86	June 16, 1919	43	12	5·92	43·75	23·68	4·60	72·03	2nd Prize & Reserve for Champion, £5.
1287	E. G. Weeks	L'Etacq Daisy 6th	Aug. 12, 1914	May 5	52	—	38	0	4·57	38·00	18·28	1·20	57·48	H.C.
1289	G. Berry	Bilberry	Mar. 16, 1916	Apr. 12	75	—	35	12	5·30	35·75	21·20	3·50	60·45	H.C.
1297	Exors. of G. Murray Smith	Fern's Oxford Laurena	May 8, 1916	May 31	26	—	26	4	5·25	26·25	21·00	Nil	47·25	—
1304	J. E. A. Willis Fleming	Happy Day	May 20, 1917	Apr. 22	65	—	23	8	4·45	23·50	17·80	2·50	43·80	—
1308	E. G. Weeks	L'Etacq Daisy 7th	Jan. 31, 1917	Mar. 10	108	May 25, 1919	31	14	4·70	31·87	18·80	6·80	57·47	H.C.
Class 227		*Guernseys*												
1351	Mrs. R. C. Bainbridge	Trequean Maggie 2nd	Feb. 11, 1913	Nov. 29, '18	209	Jan. 28, 1919	27	4	5·15	27·25	20·60	12·00	59·85	2nd Prize.
1353	W. T. Curtis	Donnington Happy Girl 3rd	Dec. 28, 1911	May 29	28	June 14, 1919	40	2	3·62	40·12	14·48	Nil	54·60	—
1356	A. W. Bailey Hawkins	Gilia of Blunham	Nov. 4, 1911	Mar. 23	95	—	37	0	3·85	37·00	15·40	5·00	57·40	—
1359	Mrs. Jervoise	Fanny du Foulon 22nd	July 3, 1911	Apr. 22	65	July 10, 1919	36	8	4·38	36·50	17·52	2·50	56·52	—
1360	Mrs. W. Howard Palmer	Donata 7th of Warren Wood.	Jan. 1, 1913	Apr. 25	62	—	30	8	4·33	30·50	17·32	2·20	50·02	—
1361	Sir J. Remnant, Bart.	Donnington Jane	Nov. 14, 1909	May 1	56	July 19, 1919	42	0	4·72	42·00	18·88	1·60	62·48	1st Prize.
1364	Mrs. R. C. Bainbridge	Elfordleigh Citron 30th	Feb. 11, 1915	June 7	19	—	28	0	5·17	28·00	20·68	Nil	48·68	—
1365	Mrs. R. C. Bainbridge	Elfordleigh Roma	Feb. 11, 1916	June 2	24	—	35	4	4·20	35·25	16·80	Nil	52·05	H.C.
1369	Mrs. W. Howard Palmer	Murrell May Rose	May 1, 1916	May 24	33	—	31	8	3·45	31·50	13·80	Nil	45·30	—
1371	H. F. Plumptre	Butterwort 14th	May 2, 1915	Apr. 26	61	—	41	12	3·80	41·75	15·20	2·10	59·05	3rd Prize.
Class 229		*Dexters*												
1412	Lady Morant	Gort Peach 9th	Feb. 10, 1913	May 15	42	—	34	14	3·35	34·87	13·40	·20	48·27	2nd Prize & Reserve for Champion, £5.
1413	Lady Morant	Harley Penelope	Nov. 12, 1908	Apr. 12	75	June 9, 1919	36	0	3·85	36·00	15·40	3·50	54·90	1st Prize & Champion, £10.

BUTTER TEST (CLASSES 230 & 231.—CATTLE.)

As at Manchester in 1916, the Dairy Shorthorn Association gave special prizes for Shorthorn cows and heifers entered in Class 231. These animals could also compete in the open classes, the prizes for which were given, as in previous years, by the English Jersey Cattle Society. The cattle in the two open classes were weighed on Tuesday evening, June 24, and were milked out on the following day at 5.15 p.m.

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MILKING TRIALS (GOATS).

Twenty-one goats were entered for these trials, four competing in Class 351 for animals that had previously won a first, second or third prize in any milking competition, the remaining 17 being in the novice class. The goats were milked out on Wednesday, June 25, at 5 p.m., the milk of the next 24 hours being taken for the trials.

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Table V. gives the full particulars of the trials and the prizes awarded.

TABLE II.—*Average Results of the Cattle in the Milk Yield Classes.*

No. of cows competing	Breed	Days in milk	Milk	Fat per cent.	Points
			Lb. oz.		
14	Shorthorn	58	49 $13\frac{6}{7}$	3·44	64·99
4	Lincolnshire Red Shorthorn .	65	52 5	2·85	66·06
6	Devon	40	40 $13\frac{2}{3}$	3·82	56·66
3	Longhorn	44	33 $0\frac{2}{3}$	4·17	50·54
7	Red Poll	74	41 $12\frac{4}{7}$	3·49	59·20
3	Ayrshire	46	51 4	3·42	65·92
5	British Friesians . . .	42	69 $3\frac{3}{5}$	2·99	82·22
17	Jersey	85	38 $10\frac{4}{17}$	4·77	62·36
10	Guernsey	65	34 $15\frac{4}{5}$	4·26	54·59
2	Dexter	58	35 7	3·60	51·68

TABLE III.—RESULTS OF BUTTER TESTS AT CARDIFF, 1919.

CLASS 230A.—COWS EXCEEDING 900 LB. LIVE WEIGHT.

No. in Catalogue	Exhibitor	Name of cow	Breed	Live weight	Date of birth	Date of last calf	No. of days in milk	Date of last service	Milk yield in 24 hours	Butter yield	¹ Butter Ratio	Colour and quality of butter		No. of points for butter	No. of points for period of lactation	Total No. of points	Awards	CHURNING TABLE					
																		Time			Temperature, ° F.		
												Colour	Quality					Begun	Finished	Duration (minutes)	Dairy	Cream and churn	Buttermilk
				lb.		1919		1919	Lb. oz.	Lb. oz.	Lb.												
[illegible]	F. H. Thornton	Dairymaid 6th	Shorthorn	1316	Feb. 26, '10	Mar. 17	101	...	61 14	1 15	31·93	Good	Good	31·00	5·00	36·00	Commended	10 1	10 35	34	55	52	52
725	The Duke of Westminster	Kenilworth Lass	Shorthorn	1400	June 10, '12	June 7	19	...	49 4	1 4	39·40	Good	Good	20·00	Nil	20·00	......	10 9	10 29	20	55	52	52
728	Capt. A. S. Wills	Duchess of Cranford 3rd	Shorthorn	1232	Oct. 29, '08	May 6	51	...	67 8	2 9¼	26·17	V. Good	V. Good	41·25	1·10	42·35	Third Prize	10 3	10 25	22	55	52	52
744	Capt. A. S. Wills	Thornby Foggathorpe 2nd	Shorthorn	1288	Sep. 11, '14	June 8	18	...	42 12	1 15¾	21·54	Good	Good	31·75	Nil	31·75	Commended	10 7	10 28	21	55	52	52
785	John Evens & Son	Holton Favourite	L'nc'n Red	1260	March 1911	April 18	68	...	64 6	1 12¼	36·14	Good	Good	28·50	2·90	31·40	......	10 11	10 45	34	55	52	52
786	John Evens & Son	Burton Roughy	L'nc'n Red	1316	March 1913	Mar. 6	112	...	47 12	1 5¾	35·12	Good	Good	21·75	5·00	26·75	......	10 12	11 10	58	55	52	53
791	John Evens & Son	Burton Cork 15th	L'nc'n Red	1372	April 14, '13	May 3	54	...	42 14	1 5¼	32·28	Good	Good	21·25	1·40	22·65	......	10 53	11 15	22	56	52	53
793	John Evens & Son	Burton Suttle	L'nc'n Red	1456	March 1913	May 29	28	...	54 4	1 7	37·73	V. Good	V. Good	23·00	Nil	23·00	......	11 5	11 32	27	56	52	53
936	John H Chick	Compton Clay	Devon	1316	Dec. 25, '09	May 23	34	...	34 14	1 3	29·36	V. Good	V. Good	19·00	Nil	19·00	......	11 15	11 43	28	56	52	52
937	John H Chick	Wynford Label 6th	Devon	1204	Nov. 23, '13	May 2	55	...	33 0	1 3½	27·07	Good	Good	19·50	1·50	21·00	......	11 10	11 35	25	56	52	52
938	John H. Chick	Wynford Spark C	Devon	1148	Sept. 4. '16	April 30	57	...	36 2	1 10	22·23	Good	Good	26·00	1·70	27·70	......	11 23	12 3	40	57	52	52
1049	Capt. Colmore	Kettleburgh Rose 4th A	Red Poll	1204	April 15, '10	May 15	42	...	51 14	1 7¼	35·31	Good	Good	23·50	·20	23·70	......	11 29	11 58	29	57	52	53
1053	Capt. A. J. M. Richardson	Brightwell Queen	Red Poll	1064	Nov. 15, '12	Mar. 18	100	May 17	40 12	1 2¾	34·77	V. Good	V. Good	18·75	6·00	24·75	......	11 50	12 16	26	57	52	53
1054	Capt. A. J. M. Richardson	Barefield Princess A	Red Poll	1288	Jan. 22, '13	May 23	34	...	44 0	1 4¾	33·92	V. Good	V. Good	20·75	Nil	20·75	......	11 54	12 14	20	58	52	52
1055	Capt. A. J. M. Richardson	Stoke Daisy	Red Poll	1092	April 7, '11	April 16	71	May 21	38 8	1 9¾	22·92	Fair	Fair	25·75	3·10	28·85	......	11 59	12 43	44	58	52	53
1144	William Gibson	Auchencloigh Crocus	Ayrshire	1120	April 17, '12	May 25	32	...	51 14	1 6¼	36·88	Fair	Fair	22·50	Nil	22·50	......	12 20	12 46	26	58	52	53
1146	William Gibson	Auchencloigh Tibbie	Ayrshire	952	Mar. 20, '10	April 18	69	...	46 6	1 10	28·53	Fair	Fair	26·00	2·90	28·90	......	12 25	12 48	23	59	52	54
1148	William Gibson	Moorside Acacia	Ayrshire	1036	April 23, '12	May 20	37	...	55 8	1 14	29·60	Fair	Fair	30·00	Nil	30·00	......	12 30	12 45	15	59	52	53
1182	A. & J. Brown	Hedge's Pretty Queen	British Friesian	1456	Nov. 5, '10	June 5	21	...	74 6	2 3¾	33·21	Fair	Fair	35·75	Nil	35·75	Commended	12 35	1 12	37	60	52	55
1183	A. & J. Brown	Hedge's Sweet Buttercup	British Friesian	1540	Oct. 12, '13	June 7	19	...	70 0	2 3½	31·54	V. Good	V. Good	35·50	Nil	35·50	Commended	12 39	1 8	29	60	52	54
263	W. M. Cazalet	Jolly Berna Lass	Jersey	924	July 25, '10	Mar. 30	88	...	34 14	1 10¾	20·85	V. Good	V. Good	26·75	4·80	31·55	......	2 19	2 45	26	64	52	57

[1] The "Butter Ratio" represents the number of lb. of milk required to make 1 lb. of butter. Ten lb. of milk are reckoned as equal to an imperial gallon.

TABLE III.—RESULTS OF BUTTER TESTS AT CARDIFF, 1919—*continued.*

CLASS 230 A.—COWS EXCEEDING 900 LB. LIVE WEIGHT.

No. in Catalogue	Exhibitor	Name of cow	Breed	Live weight	Date of birth	Date of last calf	No. of days in milk	Date of last service	Milk yield in 24 hours	Butter yield	† Butter Ratio	Colour and quality of butter		No. of points for butter	No. of points for period of lactation	Total No. of points	Awards	Churning Table: Time			Temperature, ° F.		
												Colour	Quality					Begun	Finished	Duration (minutes)	Dairy	Cream and churn	Buttermilk
				Lb.		1919			Lb. oz.	Lb. oz.	Lb.												
1270	Major The Hon. H. Pearson	Noble's Buttercup	Jersey	924	April 18, '14	Mar. 24	94	June 16	40 14	2 3¼	18·55	V. Good	V. Good	35·25	5·40	40·65	Cert. of Merit	2 21	3 14	53	64	52	57
1275	R. Bruce Ward	Ida	Jersey	980	Mar. 15, '14	Feb. 10	136	April 20	40 4	2 1	19·51	V. Good	V. Good	33·00	9·60	42·60	2nd Prize and Silver Medal	2 22	2 53	31	64	52	55
1276	R. Bruce Ward	Mammet	Jersey	1036	July 11 '08	Jan. 11	166	April 9	31 0	1 12¼	17·55	Good	Good	28·25	12·00	40·25	Cert. of Merit	2 25	3 16	51	64	52	55
1280	Dr. H. Watney	Lady's Violette 2nd	Jersey	924	Nov. 22, '14	Feb. 20	126	April 14	40 8	1 9¾	25·16	V. Good	V. Good	25·75	8·60	34·35	Cert. of Merit	2 27	3 8	41	64	52	52
1282	Dr. H. Watney	Sabina's Goose 2nd	Jersey	1008	Dec. 29, '13	April 12	75	June 21	40 0	2 0¾	19·54	Good	Good	32·75	3·50	36·25	Cert. of Merit	2 30	3 15	45	64	52	54
1283	Dr. H. Watney	Violette's Brunette	Jersey	1148	Oct. 3, '11	Mar. 6	112	April 26	35 8	2 1	17·21	V. Good	V. Good	33·00	7·20	40·20	Cert. of Merit	3 27	4 25	58	65	52	56
1284	Dr. H. Watney	Violette's Oxford	Jersey	952	Dec. 4, '11	Jan. 8	169	Mar. 8	33 14	1 13¾	18·21	V. Good	V. Good	29·75	12·00	41·75	Bronze Medal	3 25	4 15	50	65	52	55
1286	Mrs. Edgar Watts	Merry Morn	Jersey	924	May 31, '12	April 1	86	June 16	43 12	2 13½	15·38	V. Good	V. Good	45·50	4·60	50·10	1st Prize and Gold Medal	3 28	4 20	52	65	52	56
1351	Mrs. R. C. Bainbridge	Trequean Maggie 2nd	Guernsey	1092	Feb. 11, '13	Nov. 29 1918	209	Jan. 28	27 4	1 8½	17·79	V. Good	V. Good	24·50	12·00	36·50	Commended	3 38	4 10	32	65	52	60
1356	A. W. Bailey Hawkins	Gilla of Blunham	Guernsey	952	Nov. 4, '11	Mar. 23	95	...	37 0	1 9	23·68	Good	Good	25·00	5·50	30·50	...	3 42	4 12	30	65	52	56
1360	Mrs. W. Howard Palmer	Donata 7th of Warren Wood	Guernsey	1064	Jan. 1, '13	April 25	62	...	30 8	1 5½	22·69	Excel'nt	Excel'nt	21·25	2·20	23·45	...	3 44	4 14	30	65	52	58
1364	Mrs. R. C. Bainbridge	Elfordleigh Citron 30th	Guernsey	1120	Feb. 11, '15	June 7	19	...	28 0	1 10¼	17·06	Excel'nt	Excel'nt	26·25	Nil	26·25	...	3 45	4 14	29	65	52	55
1365	Mrs. R. C. Bainbridge	Elfordleigh Roma	Guernsey	1064	Feb. 11, '16	June 2	24	...	35 4	1 9¾	21·90	Excel'nt	Excel'nt	25·75	Nil	25·75	...	4 20	4 42	22	65	52	58
1371	H. Fitzwalter Plumptre	Butterwort 14th	Guernsey	1036	May 2, '15	April 26	61	...	41 12	1 9¼	26·45	Excel'nt	Excel'nt	25·25	2·10	27·35	...	4 1	4 18	17	64	52	57

CLASS 230 B.—COWS NOT EXCEEDING 900 LB. LIVE WEIGHT.

No. in Catalogue	Exhibitor	Name of cow	Breed	Live weight	Date of birth	Date of last calf	No. of days in milk	Date of last service	Milk yield in 24 hours	Butter yield	† Butter Ratio	Colour	Quality	No. of points for butter	No. of points for period of lactation	Total No. of points	Awards	Begun	Finished	Duration (minutes)	Dairy	Cream and churn	Buttermilk
1256	Grosvenor Berry	Tenda	Jersey	868	July 25, '15	Mar. 6	112	April 27	41 4	1 14¼	21·81	Good	Good	30·25	7·20	37·45	Cert. of Merit	11 2	11 54	52	56	52	60
1258	J. Carson	Lady Dinah	Jersey	868	April 5, '12	April 2	85	...	40 14	1 11¾	23·56	Fair	Fair	27·75	4·50	32·25	...	11 24	12 0	36	50	52	62
1269	Major The Hon. H. Pearson	Gannemead 2nd	Jersey	840	Nov. 4, '12	Mar. 17	101	June 9	55 2	2 3¼	25·02	Good	Good	35·25	6·10	41·35	1st Prize	11 38	12 2	24	57	52	56
1271	Mrs. Rudd	Meadow Vale Pride	Jersey	868	April 1, '13	April 17	70	...	42 2	1 14	22·05	V. Good	V. Good	30·00	3·00	33·00	...	11 27	12 2	35	56	52	55
1273	Mrs. Hayes Sadler	Golden Fleece 9th	Jersey	868	June 8, '14	April 4	83	...	47 14	2 0¼	23·75	V. Fair	Very Fair	32·25	4·30	36·55	Cert. of Merit	12 8	1 0	52	59	52	56

† The "Butter Ratio" represents the number of lb. of milk required to make 1 lb. of butter. Ten lb. of milk are reckoned as equal to an imperial gallon.

TABLE III.—RESULTS OF BUTTER TESTS AT CARDIFF, 1919—*continued.*

CLASS 230 B.—COWS NOT EXCEEDING 900 LB. LIVE WEIGHT—*continued.*

No. in Catalogue	Exhibitor	Name of cow	Breed	Live weight	Date of Birth	Date of last calf	No. of days in milk	Date of last service	Milk yield in 24 hours	Butter yield	[1] Butter Ratio	Colour and quality of butter		No. of points for butter	No. of points for period of lactation	Total No. of points	Awards	CHURNING TABLE					
												Colour	Quality					Time			Temperature, ° F.		
																		Begun	Finished	Duration (minutes)	Dairy	Cream and churn	Buttermilk
				Lb.		1919			Lb. oz.	Lb. oz.	Lb.												
1273	Mrs. Hayes Sadler	Hazon Chain	Jersey	896	Nov. 28, '11	Feb. 26	120	May 14	37 12	1 14¾	19·64	V. Good	V. Good	30·75	8·00	38·75	3rd Prize	11 52	12 17	25	58	52	56
1278	R. Bruce Ward	Restful 2nd	Jersey	700	July 9, '11	April 20	67	...	41 8	1 15	21·41	Fair	Fair	31·00	2·70	33·70	...	12 21	12 58	37	59	52	56
1285	Mrs. Edgar Watts	Doctor's Princess	Jersey	868	Aug. 8, '15	Feb. 28	118	May 17	36 4	1 15½	18·56	V. Good	V. Good	31·25	7·80	39·05	2nd Prize	2 30	3 12	42	64	52	60
1287	E. G. Weeks	L'Etacq Daisy 6th	Jersey	868	Aug. 12, '14	May 5	52	...	38 0	1 15¾	19·14	Fair	Fair	31·75	1·20	32·95	Cert. of Merit	12 40	1 14	34	60	52	60
1289	Grosvenor Berry	Bilberry	Jersey	868	Mar. 16, '15	April 12	75	...	35 12	1 15¾	18·01	Very Fair	Very Fair	31·75	3·50	35·25	Cert. of Merit	2 14	3 10	56	64	52	58
1296	A. B. Sanderson	Bentley Beauty	Jersey	868	Feb. 14, '16	April 25	62	...	23 12	1 0½	23·38	Excel'nt	Excel'nt	16·25	2·20	18·45	...	3 40	4 1	21	64	52	62
1297	Exors. of G. Murray Smith	Fern's Oxford Laurena	Jersey	728	May 8, '16	May 31	26	...	26 4	1 7½	18·06	V. Good	V. Good	28·25	Nil	28·25	...	2 19	3 22	63	64	52	58
1304	J. B. A. Willis Fleming	Happy Day	Jersey	728	May 20, '17	April 22	65	...	23 8	1 1¼	21·79	Poor	Poor	17·25	2·50	19·75	...	2 22	2 50	28	64	52	60
1308	E. G. Weeks	L'Etacq Daisy 7th	Jersey	756	Jan. 31, '17	Mar. 10	108	May 25	31 14	1 8¾	20·60	Very Fair	Very Fair	24·75	6·80	31·55	Cert. of Merit	3 20	3 45	25	64	52	59
1353	W. T. Curtis	Donnington Happy Girl 3rd	Guernsey	896	Dec. 28, '11	May 29	28	June 14	40 2	1 7¾	27·03	V. Good	V. Good	23·75	Nil	23·75	...	3 3	3 20	17	64	52	56
1369	Mrs. W. Howard Palmer	Murrell May Rose	Guernsey	840	May 1, '16	May 24	33	...	31 8	1 1½	28·39	Excel'nt	Excel'nt	17·75	Nil	17·75	...	3 47	4 4	17	64	52	58

TABLE IV.—RESULTS OF BUTTER TESTS AT CARDIFF, 1919.

CLASS 231.—DAIRY SHORTHORN COWS OR HEIFERS.

715	R. W. Hobbs & Sons	Hawthorn 9th	Shorthorn	...	Nov. 26, '10	May 20	37	...	57 8	1 13¾	30·92	Pale	Fair	29·75	Nil	29·75	...	10 1	10 27	26	55	52	54
716	W. G. Millar	Cowslip Pride	Shorthorn	...	Jan. 5, '09	May 1	56	...	68 14	1 13¼	37·67	Pale	Fair	29·25	1·60	30·85	...	10 5	10 20	15	55	52	54
721	C. & E. Stephenson	Waterloo Lily 4th	Shorthorn	...	Feb. 6, '10	April 8	79	...	50 10	1 10¾	30·28	Fair	Fair	26·75	3·90	30·65	...	10 8	10 49	41	55	52	54
723	F. L. Thornton	Dairymaid 6th	Shorthorn	...	Feb. 26 '10	Mar. 17	101	...	61 14	1 15	31·93	Good	Good	31·00	5·00	36·00	2nd Prize	10 1	10 35	34	55	52	52
725	The Duke of Westminster	Kenilworth Lass	Shorthorn	...	Jan. 10, '12	June 7	19	...	49 4	1 4	39·40	Good	Good	20·00	Nil	20·00	...	10 9	10 29	20	55	52	52
728	Capt. A. S. Wills	Duchess of Cranford 3rd	Shorthorn	...	Oct. 29, '08	May 6	51	...	67 8	2 9¼	26·17	V. Good	V. Good	41·25	1·10	42·35	1st Prize	10 3	10 25	22	55	52	52
736	W. G. Millar	Cockerham Purity	Shorthorn	...	Feb. 16, '14	May 4	53	...	53 2	1 12¾	29·56	Fair	Fair	28·75	1·30	30·05	...	10 20	10 42	22	55	52	54
744	Capt. A. S. Wills	Thornby Foggathorpe 2nd	Shorthorn	...	Sept. 11, '14	June 8	18	...	42 12	1 15¾	21·54	Good	Good	31·75	Nil	31·75	3rd Prize	10 7	10 28	21	55	52	52
761	John Lucas	Astley Cressida 3rd	Shorthorn	...	Sept. 2, '16	April 7	80	...	35 0	1 4½	27·31	Fair	Fair	20·50	4·00	24·50	...	10 11	10 47	36	55	52	60
762	John Lucas	Marchioness of Barrington 6th	Shorthorn	...	Oct. 1, '16	May 10	47	...	40 6	1 4½	31·61	Good	Good	20·50	·70	21·20	...	10 36	11 20	44	56	52	53
768	M. & P. Perkins	Bloom 20th	Shorthorn	...	Feb. 8, '16	May 25	32	...	Ab	sent													
770	C. & E. Stephenson	Rickerscote Vittoria	Shorthorn	...	Jan. 14, '16	June 2	24	...	47 0	1 14¾	24·45	V. Good	V. Good	30·75	Nil	30·75	Reserve and Commended	10 50	11 26	36	56	52	54

[1] The "Butter Ratio" represents the number of lb. of milk required to make 1 lb of butter. Ten lb. of milk are reckoned as equal to an imperial gallon.

TABLE V.—MILK-YIELD CLASSES FOR GOATS AT CARDIFF, 1919.

CLASS 351.—GOATS THAT HAVE PREVIOUSLY WON A FIRST, SECOND OR THIRD PRIZE IN ANY MILKING COMPETITION.

No. in Catalogue	Exhibitor	Name of goat	Breed	Date of birth	Date of last kid.	No. of days in milk	Milk yield in 24 hours	Percentage of fat		Lbs. of fat	Lbs. of solids-not-fat	Points						Awards and Remarks
								Morn.	Even.			Milk	Fat lbs. × 20	Solids-not-fat × 4	Lactation	Deduction	Total	
							Lb. oz.											
2040	Mrs. C. L. Pickard	Forest Minnikin	Anglo-Nubian	Apl. 10, '12	Mar. 23, '19	95	6 12	4·10	4·50	·29	·64	6·75	5·80	2·55	·91	—	16·01	Third Prize and Pomeroy Challenge Cup
2051	Herbert E. Hughes	Broxbourne Fairy Queen	Swiss	Feb. 24, '10	Feb 25, '18	486	5 4	3·90	4·00	·21	·57	5·25	4·14	2·30	6·00	1	16·69	Second Prize
2052	Herbert E. Hughes	Broxbourne March Maiden	Saanen	Mar. 11, '11	Mar. 16, '14	5 yrs.	1 8	3·10	3·25	·05	·12	1·50	·94	·50	6·00	1	7·94	—
2062	Miss Pope	Progress	Anglo-Nubian-Swiss	Apl. 10, '16	Apr. 15, '19	72	8 12	3·20	3·80	·30	·77	8·75	6·12	3·10	·52	1	17·49	First Prize

CLASS 352.—GOATS NOT ELIGIBLE FOR CLASS 351.

No. in Catalogue	Exhibitor	Name of goat	Breed	Date of birth	Date of last kid.	No. of days in milk	Milk yield in 24 hours	Morn.	Even.	Lbs. of fat	Lbs. of solids-not-fat	Milk	Fat lbs. × 20	Solids-not-fat × 4	Lactation	Deduction	Total	Awards and Remarks
					1919													
2032	Miss Vera Flood-Page	TRa Sunbeam.	Anglo-Nubian	June 13, '15	May 7	50	7 8	3·60	4·90	·32	·67	7·50	6·40	2·68	·14	1	15·72	—
2033	Mrs. Reginald Pease	Sadberge Brambling	Anglo-Nubian	May 6, '16	May 8	49	5 14	5·00	6·00	·32	·54	5·87	6·44	2·18	·13	—	14·62	—
2035	Mrs. Reginald Pease	Sadberge Mavis	Anglo-Nubian	Mar. 17, '15	May 20	37	4 10	4·50	4·85	·21	·41	4·62	4·32	1·66	Nil	—	10·60	—
2037	Mrs. Reginald Pease	Sledwick Matilda	Anglo-Nubian	Mar. 1, '15	May 21	36	4 12	3·35	4·00	·17	·42	4·75	3·48	1·68	Nil	1	8·91	—
2039	Miss K. Pelly	Regius Aganippe	Anglo-Nubian	Jan. 4, '15	Feb. 22	124	3 2	4·20	4·00	·12	·28	3·12	2·56	1·12	1·40	—	8·20	—
2044	Herbert E. Hughes	Broxbourne Joan	Swiss	Mar. 29, '14	Apr. 17	70	9 14	2·90	3·10	·29	·84	9·87	5·92	3·38	·50	1	18·67	—
2045	Miss A. Amici-Grossi	Tremedda Lalage	Anglo-Nubian-Swiss	Apr. 5, '15	Mar. 15	103	12 2	3·20	4·00	·44	1·07	12·12	8·92	4·28	1·03	1	25·35	Second Prize
2046	Miss A. Amici-Grossi	Tremedda Selene	Anglo-Nubian-Swiss	Mar 22, '15	Mar. 3	115	14 2	4·30	4·05	·59	1·16	14·12	11·80	4·64	1·23	—	31·79	First Prize and Dewar Cup
[illegible]																		
2049	Lord Dewar	Mayfield Jessamine	Anglo-Nubian-Swiss	Apl. 21, '17	Apr. 2	85	8 6	3·05	3·40	·27	·71	8·37	5·36	2·86	·78	1	16·32	—
2050	Miss Vera Flood-Page	TRa Starry	Anglo-Nubian-Swiss	Jan. 22, '16	Mar. 27	91	6 12	3·00	3·90	·23	·59	6·75	4·64	2·36	·83	1	13·58	—
2054	Mesdames Hunter & Soames	Pytchley Cinderella	Anglo-Nubian-Swiss	Jan. 26, '17	Feb. 25	121	5 4	3·30	3·30	·17	·44	5·25	3·46	1·76	1·33	1	10·80	—
2058	Mrs. Lacy-Hulbert	Mayfield Mignonette	Anglo-Nubian-Swiss	Mar. 6, '16	Feb. 24	122	6 14	3·70	3·60	·25	·62	6·87	5·00	2·47	1·34	1	14·68	—
2063	Miss Pope	Prude	Anglo-Nubian-Swiss	Feb. 23, '15	Mar. 8	110	8 12	4·20	4.60	·38	·79	8·75	7·70	3·16	1·14	—	20·75	Third Prize

TABLE VI.—*Average Results of the Cattle in the Butter Test Classes.*

No. of cows competing	Breed	Live weight	Days in milk	Milk	Butter	Ratio	Points
		Lb.		Lb. oz.	Lb. oz.	Lb.	
4	Shorthorn	1309	47	55 5½	1 15	28·56	31·07
4	Lincoln. Red Shorthorn .	1351	66	52 5	1 7⅝	34·81	25·91
3	Devon.	1223	49	34 10⅔	1 5½	25·79	22·50
4	Red Polls	1162	62	43 12½	1 6 3/16	31·57	24·38
3	Ayrshire	1036	46	51 4	1 10⅙	31·33	26·97
2	British Friesian . . .	1498	20	72 3	2 3⅝	32·42	35·62
23	Jersey	887	91	37 5 19/23	2 2 35/92	17·38	39·43
8	Guernsey	1008	66	33 14¾	1 7 11/16	22·91	26·29
11	Shorthorns (Special Class) .	—	—	52 2 8/11	1 13 5/44	28·67	30·41

EXPERIMENTS IN THE DAIRY.

In order to give an ocular demonstration of the differences that exist in the richness, and so in the quality, of the milk of the various breeds of cattle, three gallons of milk from the morning and evening's milk of nine of the Dairy breeds were separated, churned, and made up into lumps of butter.

The results confirm the experiments carried out at previous shows of the Society, and prove that the milks of the Channel Island and Longhorn breeds are the richest in fat, and consequently have a higher food value than the milks of the other Dairy breeds, an item, which since milk has been controlled, has apparently been lost sight of, since it has not been recognised in fixing the price of milk.

The fat percentage and butter ratio figures given in Tables II. and VI. (pp. 5 and 10) show the average fat percentages and the quantity of milk used in making one pound of butter, and therefore it is not necessary to give the figures of this experiment.

CREAM GAUGE TUBES.

For several years glass tubes, graded to show the percentage of cream in milk, have been in general use. To test the accuracy of such tubes the following experiment was carried out:—A small sample of milk was taken from the bulk of each of the milks shown in Table VII. From these samples the cream gauge glasses were filled up to the highest line, and at the same time two samples were taken for analyses by the Gerber. Table VII. gives the fat readings as shown by the cream gauge glasses and the average fat percentage of the two samples as disclosed by the Gerber, from which it will be seen that while the graded glasses may give a comparative idea of the differences that may exist between individual milks, they cannot be accepted as accurate.

TABLE VII.

Breed	Percentage of Cream shown in Cream Gauge	Butter Fat by Gerber. Average of 2 samples
		Per cent.
Shorthorn	12·50	4·70
Devon	7·00	2·85
Longhorn	14·00	5·10
Red Poll	9·50	4·30
Ayrshire	8·50	3·75
British Friesian	10·00	3·55
Jersey	15·50	4·85
Guernsey	13·50	4·15
Dexter	15·00	5·15

FAT AND PROTEIN CONTENT.

On the invitation of the Society certain members of the Research Institute in Dairying from Reading kindly gave their valuable help in carrying out some interesting experiments, which but for them could not have been attempted.

The first experiment was undertaken with a view to comparing the fat and protein content, as determined by rapid practical tests, of the milk of the different breeds of cows used in the cheese-making experiments. Duplicate samples were sent to the University College, Reading, so that the results might be checked by comparison with analyses. A comparison was also desired between the fat and protein content of the different samples of milk and the weight of cheese yielded.

Captain Golding's report is as follows:—

"Three samples of milk were taken from the well mixed milk of each breed of cows, five gallons of the milk having been weighed out for the cheese-making experiments.

"*Samples A* were used for the Gerber test for fat, which was made in the dairy under the conditions ordinarily obtaining on a farm or dairy, the Gerber bottles and pipettes not being specially selected or calibrated.

"*Samples B* were used also at Cardiff for a determination of the proteins by the rapid method of the Formol titration, a method which could be used on a farm or in a dairy.

"The acidity and specific gravity were also recorded.

"*Samples C* were preserved with bichromate of potash, and were sent to Reading for determinations of the fat and total nitrogen by exact chemical analyses.

"The Formol titration for the determination of the protein content was made as follows:—A 10 c.c. pipette was rinsed out with the milk to be tested, this milk being placed in a white porcelain dish, and used as a colour control. Ten cubic centimetres of the milk to be tested were then accurately measured into a similar dish, and ten drops of a phlenolphthalein (5 per cent. in 50 per cent. alcohol) solution added. A tenth normal solution of strontia was then run in till the first tinge of permanent pink colour was noticed on comparing the well stirred milk in the dish with the control sample. The number of cubic centimetres taken multiplied by ten gave the number of cubic centimetres of normal alkali required per litre of the milk, which value is known as the 'degree of acidity.' One cubic centimetre of 40 per cent. commercial formaldehyde was then added, which has the effect of liberating acids from the protein (or casein) in proportion to the amount of this substance present.

"The titration with the alkaline solution was resumed and continued till the same tint of pink colour as that taken for the acid titration was reached. A subtraction was made for the cubic centimetres of alkali used for the acidity of the milk and also for the acidity of the Formol solution, which was found by experiment to equal 0·15 c.c. of the alkali used per 1 c.c. Formol.

"The result multiplied by 10 gave the so-called aldehyde figure and this again by 0·171 gave the proteins present in the sample of milk.

Example.

"Ten c.c. milk took 2·6 c.c. alkali, = 26° acidity. 1 c.c. of formaldehyde was then added, and a further 2·1 c.c. were required to bring it to the neutral point again making 4·7 c.c. in all. The formaldehyde took ·15 c.c. alkali, determined by separate experiment. Therefore the proteins = (4·7 — 2·6 — 0·15) × 10 × 0·171 = 3·334.

"As a matter of fact the 10 c.c. pipette did not deliver exactly 10 grams. of this milk but 10·211, so that the result had to be multiplied by 10 and divided by 10·211, = 3·26 per cent. It would, however, be possible to buy pipettes which delivered more nearly 10 grams. of milk.

"The results (see Table VIII.) show a fairly close agreement between percentages of proteins determined by this rapid Formol test and the nitrogen determined by the Kjeldahl method of analysis multiplied by 6·38. The Formol method is practical and convenient, and might be more generally used as a rapid test for the protein content of milk in conjunction with the Gerber method for the determination of fat.

"A comparison between the Gerber tests made and the chemical determination of the fat shows about the same order of agreement as between the two methods for proteins.

"In considering the differences between the Gerber determinations among themselves, and comparing with the analytical

TABLE VIII.—*Results of Tests and Analyses of Milks from different breeds of Cattle.*

Breed	Specific Gravity at 15·5° C.	Degrees Acidity	Fat by Gerber	Fat by Extraction	Aldehyde Figure	Protein by Formol Titration[1]	Protein by Kjeldahl
Shorthorn (1) . .	1·0322	27·0	4·3 4·3	4·48	21·0	3·516	3·170
„ (2) . .	1·0322	25·0	3·7 3·5	3·51	19·5	3·261	3·078
Lincoln. Red (1) .	1·0312	23·0	4·4 4·4	4·33	18·5	3·097	2·830
„ „ (2) .	1·0326	24·0	2·7 2·7	2·78	18·5	3·094	2·790
Devon (1) . .	1·0329	27·0	4·4 4·5	4·59	19·0	3·180	3·050
„ (2) . .	1·0336	26·0	3·0 3·1	3·07	20·5	3·423	3·203
Longhorn (2) . .	1·0328	23·0	4·5 4·7	4·38	20·5	3·425	3·294
Red Poll (1) . .	1·0331	25·0	3·9 4·0	4·03	20·0	3·346	3·380
„ (2) . .	1·0321	26·0	3·7 3·6	3·52	19·5	3·261	3·168
Ayrshire (2) . .	1·0325	24·5	3·7 3·8	3·75	21·0	—[2]	—[2]
British Friesian (2)	1·0316	24·0	3·1 3·2	3·15	18·0	2·930	2·860
„ „ (3)	1·0332	23·5	2·35 2·30	2·23	18·7	3·128	3·020
Jersey (1) . .	1·0320	26·0	5·0 5·0	4·81	19·0	3·182	3·180
„ (2) . .	1·0336	26·0	4·2 4·0	4·13	20·5	3·423	3·220
„ (3) . .	1·0324	24·0	5·6 5·65	5·30	20·5	3·432	3·473
Guernsey (1) . .	1·0311	24·0	6·0 6·1	6·10	18·5	3·098	3·109
„ (2) . .	1·0320	24·0	3·7 3·6	3·69	18·5	3·095	3·000
Dexter (2) . .	1·0342	24·0	3·4 3·77	3·53	19·5	3·254	3·235

NOTE.—The Samples (1) were taken on Sunday evening, June 22.
„ „ (2) „ „ Monday morning, „ 23.
„ „ (3) „ „ Tuesday evening, „ 24.

[1] Corrected for weight of milk delivered by pipette.
[2] Flask broken in analysis.

results obtained, it must be borne in mind that the object was to make these tests under the disadvantages of practical conditions, and that no previous calibrations of bottles nor pipettes was made.

"The differences in the degrees of acidity of the fresh milk of the different breeds are of interest, and are therefore included in this report.

"The sum of the two determinations of fat per cent. and the two determinations of protein are compared in Table XI., with the weight in pounds of the green curd in the cheeses made from 10 gallons of milk. The water in this curd probably varies considerably, but the mature cheeses are not yet ready for comparison.

"In conclusion, it must be borne in mind that these experiments are too few in number to base any general conclusions upon them. The demonstration of the Formol titration as a practical method in the comparison with nitrogen determined by Kjeldahl is of interest. The sum of the protein content plus fat gives an indication of the value of the milk for cheese making purposes which should justify an extended use of the Formol titration."

CHEESE EXPERIMENTS.

In the spring and early summer months, when the supply of milk is often greater than the demand, dairy farmers would do well in making the surplus milk into hard cheese of better keeping quality than that which is known as the "smallholder" type of cheese.

The milk available, however, may vary according to the breed of cow on the particular farm, as, for instance, British Friesians and Jerseys; consequently it was thought that an experiment with milks from various breeds of cattle might be of some practical use.

The main objects to which attention was chiefly directed were (*a*) to ascertain as nearly as possible the time taken, and the nature of the coagulation of the different milks, and (*b*) the quality and weight of the cheeses made.

The extreme variations in the acidity of the various samples made the results under (*a*) very erratic, and it is due to this fact that some of the samples were firm and short.

Unfortunately sufficient milk could not be obtained from all the twelve dairy breeds at the Show, consequently the experiment was limited to the seven breeds named in Table X.

The cheeses were made on June 23 and 27, ten gallons of milk (five evening and five morning) being used in every case. Samples of each lot of milk were taken to show the comparison of the sum of fat and proteins per cent. with the weight of the green curd, this part of the work being undertaken by Captain Golding and his assistants at the Dairy Research Institute at Reading, while Mr. Alec Todd, of the British Dairy Institute, at the same place superintended the whole of the practical work of the cheese making, full particulars of which are shown in Tables IX. and X.

TABLE IX.

Breed	Date	Temperature		Time					Nature of Coagulation (*a*) Quality of Curd (*b*)	Acidity			
		Dairy	Milk when renneted	Renneting	Coagulation commencing	Difference	Coagulation complete	Salting		Milk	at cutting	in drawing Whey	Grinding
Shorthorn . .	June 23	°Fahr. 57·5	°Fahr. 85	a.m. 11.20	a.m. 11.37	minutes 17	minutes 50	p.m. 2.45	(*a*) Very good, firm (*b*) Flavour bad, curd good	·21	·14	·15	·23
Lincoln Red .	June 23	57·5	85	11.9	11·24	15	58	3.5	(*a*) Rather soft, weak (*b*) Good curd	·19	·125	·15	·29
Devon . . .	June 23	57·5	86	11.26	11.35	9	45	2.50	(*a*) Firm, good, free (*b*) Good curd, rather wet	·22	·15	·16	·28
Red Poll . .	June 23	57·5	85	11.14	11.23	9	36	2.45	(*a*) Very firm, free (*b*) Fairly good curd, rather firm and acid	·22	·135	·15	·28
British Friesian .	June 27	58·5	85	10.54	11.9	15	50	3.50	(*a*) Rather soft but sweet (*b*) Good curd, very mellow	·18	·12	·15	·22
Jersey . . .	June 27	58·5	85	10.36	10.40	4	20	a.m. 12.30	(*a*) Very firm and short (*b*) Curd very acid and soft, with a very bad flavour	·26	·18	—	·38
Guernsey . .	June 23	57·5	85	11.8	11.18	10	45	p.m. 2.40	(*a*) Firm, free, cream all down (*b*) Very good curd, dry and soft	·24	·15	·16	·27

TABLE X.

Breed	Milk	Weight of curd when bandaged		Weight of curd when ripe		Loss in weight	
	Gall.	Lb.	oz.	Lb.	oz.	Lb.	oz.
Shorthorn	10	13	8	9	4	4	4
Lincoln Red	10	12	12	8	4	4	8
Devon	10	15	8	9	2	6	6
Red Poll	10	14	4	9	4	5	0
British Friesian	10	12	8	8	2	4	6
Jersey	10	15	8	10	0	5	8
Guernsey	10	15	8	9	0	6	8

The Cheeses, after bandaging, were sent to the British Dairy Institute at Reading, where they were kept until September 17, when they were kindly judged by Mr. John Benson who was examining the candidates in practical cheese-making for the National Diploma in Dairying.

His remarks were as follows :—

Shorthorn.—Quality good, flavour slightly bitter.

Lincoln Red—Quality very good, flavour good

Devon—Quality very good, flavour good, blue mould.

Red Poll—Quality fair, rather hard flavour, slightly acid.

British Friesian—Quality medium, slightly discoloured, flavour bitter.

Jersey—Quality good, flavour good, slightly firm.

Guernsey—Quality good, flavour good, slightly firm.

TABLE XI.—*Comparison of the sum of Fat and Proteins per cent. with the weight of Green Curd from* 10 *gallons of Milk as found in the Cheese-making Experiments.*

Breed	Sum of percentages of fat by Gerber and protein by Formol	Sum of percentages of fat and protein found by analysis	Green curd from 10 gallons of milk in lbs.
Shorthorn	14·677	14·238	13·50
Lincolnshire Red	13·291	12·730	12·75
Devon	14·103	13·910	15·50
Red Poll	14·201	14·098	14·25
British Friesian	10·906	10·500	12·50
Jersey	18·114	17·546	15·50
Guernsey	15·893	15·899	15·50

THE SAMPLING OF MILK.

To show how difficult it is to take an accurate sample from a bulk of milk several experiments were carried out, the results of two of which are here given as illustrations. A full churn of milk in every case was selected and set aside for about one hour, when samples were taken by a glass tube (1) of the whole contents of the churn (2) of the milk at three different depths. The samples were tested for fat by the Gerber process.

TABLE XII.

	Fat percentage No. 1 churn.	Fat percentage No 2 churn.
Whole contents of churn	5·30	4·35
Milk from top of churn	Too much fat to be read.	8·10
Milk from middle of churn. . . .	4·30	4·50
Milk from bottom of churn. . . .	2·35	2·40

To take an accurate sample of milk for analysis from a full churn when a testing tube is not available, the milk should be first roused with a plunger, and then a good quantity of the milk should be taken from the churn and poured back into it again, and this should be repeated more than once.

Where the temperature of milk has fallen, as it will do after being left in a churn a short time, it is a difficult matter to take an accurate sample of the bulk unless (a) the sample be taken with a tube or (b) the milk be heated up to 101° F. and mixed as mentioned above.

SCALDED CREAM EXPERIMENTS.

These experiments, started at first at the Nottingham Show, and repeated at Manchester, were continued at Cardiff, the work being undertaken by Miss A. J. W. Nicholas, M.B.E., the Dairy Instructress to the Cornwall County Council, who has carried these out from their commencement.

Twenty pounds of milk were used in each case, the breeds represented and the full particulars of the experiment being given in the following table :—

TABLE XIII.

Breed	Weight of milk	Time setting before scalding	Temperature at which scalding c'mpleted	Time of scalding	Time standing before skimming	Weight of skimmed cream		Fat on skimmed milk	Quality
	Lb.	Hours	° Fahr.	Minutes	Hours	Lb.	oz.	Per cent.	
Shorthorn . .	20	15	190	45	24	1	1	·20	Fair.
Lincoln. Red .	20	17	190	40	24	1	2	1·10	Fairly good.
Devon . .	20	17	176	30	22	1	1	·75	Excellent.
Longhorn . .	20	14	196	45	24	1	12	·926	Very good.
Red Poll . .	20	17	185	40	24	1	4	1·12	Fair.
Ayrshire . .	20	17	176	20	22	1	1	1·15	Very good.
British Friesian.	20	17	180	30	22	1	4	·60	Very good.
Jersey . . .	20	15	196	55	26	1	10	·60	Excellent.
Guernsey . .	20	15	190	50	26	1	9	·775	Excellent.

If these figures are compared with those published in the previous reports, it will be seen that milks with a higher fat percentage require different treatment from those not so rich in fat.

The differences may be summarised as below :—

With milks rich in fat.

1. Less time is required for setting before scalding.
2. Scalding must be at a much higher temperature.
3. The duration of the scalding must be from fifteen to thirty-five minutes longer.
4. After scalding the cream should be left from two to four hours longer before being skimmed.

With such treatment, the greatest weight and the best quality of cream will be produced.

It must, however, be borne in mind that only practice will make perfect, and if the cream is scalded too quickly or at too high a temperature at starting the colour and flavour of the scalded cream will be affected. As the figures in the above Table were the outcome of not one, but of many experiments, they may be considered as fairly reliable and so generally useful to the makers of scalded cream.

A second experiment was carried out, which not only produced excellent cream, but saved a considerable amount of time and labour in the making, and further claims to turn out butter of better keeping when butter is made from the scalded cream. Five pounds of separated cream were poured into 5 lb. of fresh separated milk and left to set in a cool place for about six hours. The milk was then scalded by placing it in hot water at 150° Fahr. and gradually raising the temperature of the water to 210° Fahr., the whole process of scalding lasting only two hours.

The particulars of this experiment are given in Table XIV.

TABLE XIV.

Breed	Milk	Cream	Time setting before scalding	Temperature at which scalding c'mpleted	Time scalding	Time left before skimming	Weight of skimmed cream	Fat on skimmed milk	Quality
	Lb.	Lb.	Hours	°Fahr.	Hours	Hours	Lb. oz.	Per cent.	
Jersey .	5	5	6	210	2	20	4 15	5·0	Excellent.
Guernsey .	5	5	6	210	2	20	4 14	4·0	Excellent.

In concluding this report I would specially mention the indebtedness of the Society to Captain Golding, Mrs. Venn, and Mr. A. Todd, for the research and experimental work carried out by them. I would also express my personal gratitude to my three assistant stewards, Major Sir Robert Grierson, and Captains Ashton and Byng-Stephens; to Messrs. Hammond and Crauford, for their work in connection with the milk yield and butter test trials; and to Mr. Hasted and the whole of the staff of the Dairy. The work of this department necessitates long and strenuous hours, but nothing seemed to be hard, or too exacting to the expert lady workers in the Dairy. I would also refer to the generosity of the Exors. of the late Thomas Corbett and to Mr. Thomas Appleby, for the loan, without charge, of cheese presses, curd mill, and double-jacketed cheese vats.

ERNEST MATHEWS.

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Amersham.

AGRICULTURAL EDUCATION EXHIBITION, CARDIFF, 1919.

IT was particularly gratifying to see that the Agricultural Education Exhibition, which always formed so attractive a feature of the Society's Shows, made its re-appearance at Cardiff, thus indicating that those responsible for the education of the rising generation of the agricultural community were ready to resume their pre-war activities. The Exhibition which Mr. J. L. Luddington had to direct was full of interest, and whilst differing in form very little from those with which Members have now become familiar, the several items composing it made it apparent that educational and research work, so far from suffering from the stress of five years war conditions, have been stimulated by it, and this country may well claim a place second to no other in these vital matters. It may be claimed, too, that the Society can apply itself to no more useful work than the encouragement of the investigation of farming problems, and the dissemination of its results.

A new feature was provided by the exhibit of old farming implements staged by the National Museum of Wales, which though having no direct practical application, was of considerable historical value, and it may be hoped that some of those who saw it may be stimulated to collect and preserve similar objects from other parts of the country, while they may still be met with and before their nature and uses are quite forgotten. Tillage implements are changing so rapidly to meet the requirements of modern machinery, and the application of mechanical power to the cultivation of the soil, that the opportunity of making a representative collection of the more primitive instruments of husbandry will soon pass.

The Rothamsted Experimental Station.—The interesting exhibits from this Station showed the results of the old long continued experiments on the effect of manures in crops, and of recent work in various departments. The results of the classic manurial trials on wheat grown continuously since 1843 were illustrated by sheaves of wheat representing the yield from different plots. It is interesting to note that a fair average yield, *i.e.* 12½ bushels per acre, is still obtained from the plot, which has received no manure since 1843. This is, however, only about ⅓ the crop obtained from the plots which receive yearly applications of either complete artificials or farmyard manure. The effect on the yield of omitting various constituents of the complete manure was also demonstrated.

The results obtained from the park grass plots at Rothamsted which have been under experiment since 1856 were illustrated by a series of miniature hay ricks. These demonstrated the fact that manurial treatment greatly affects both the size and composition of the crop. The application of nitrogenous manures with minerals, increases the yield and reduces the proportion of weeds, but at the same time diminishes or may even extinguish the leguminous flora. The omission of potash from the mineral manure has a considerable effect in reducing both the total yield and the proportion of leguminosæ.

Another exhibit showed stages in lime starvation of grassland. Samples of turf were shown from land well supplied with lime, and others from adjacent land suffering in different degrees from lime starvation, and showing this both by the composition of the herbage and by chemical analysis of soil.

An important development of recent work is in the production of artificial farmyard manure from straw. This is produced by a fermentation process, and it resembles ordinary farmyard manure both in appearance and in its content of nitrogen and organic matter.

The superiority of natural farmyard manure over artificial fertilisers, in regard to the clover crop, was also demonstrated. Farmyard manure applied to mangolds in 1915 gave a higher yield of clover in 1917, and this had a distinctly beneficial effect on the wheat crop of 1918. The importance of sheltering farmyard manure was clearly demonstrated. Experiments with equal quantities of farmyard manure stored under cover and in the open, showed an increase of about 15 per cent. in crop yield as a result of storing under cover. A number of new and promising fertilisers exhibited were largely the outcome of war conditions. Potassium chloride prepared from blast furnace dust, and a high grade flue dust, containing as much as 17 per cent. of potash, have both proved valuable during the potash famine. Ammonium nitrate and decomposed cordite, waste products from the war, were found to be useful fertilisers. Activated sludge containing 7 per cent. nitrogen is a fertiliser that deserves careful investigation as a means of reducing the lamentable waste from our present sewage system.

The very interesting work done at Rothamsted on soil sterilisation was illustrated by specimens and pictures. For this purpose various war products, such as poison gases, are being used, as well as specially prepared substances. Another waste product of the war is acetone tar, which has given satisfactory results as a dressing for protecting grain against the depredations of birds.

Exhibits dealing with insect and fungoid pests included cases showing the development of the wireworm from the egg, through the larval or wireworm stage to the pupa, and finally to the click beetle or perfect insect. Another case contained a collection of other insects, some of them beneficial, which are sometimes mistaken for wireworms.

The Plant Diseases exhibit consisted of a demonstration of a single organism, *Botrytis cinerea.* This was shown growing on such varied hosts as apples, tomatoes, onions, lettuces, potato-haulms and tropical fruits, for this fungus may produce disease in practically all plants, and is the cause of considerable loss. When host plants are absent it lives on decaying organic matter. In unfavourable conditions the fungus gives rise to resistant bodies, sclerotica, which tide over the adverse period. Thus, at the end of autumn sclerotica are often formed and enable the fungus to live through the winter months. In the spring when conditions again become favourable the sclerotica germinate, giving rise to an enormous number of spores. These immediately attack newly planted crops reproducing and rapidly spreading the fungus. Large diagrams illustrated the various phases in the life history of the organism. Certain methods whereby the fungus is studied in the laboratory were also shown.

A case contained a large number of books written by the staff of the station. These included the original Rothamsted Memoirs, by Lawes & Gilbert, in addition to the subsequent volumes. An album showed views of the past and present laboratories, and of the fields. Large pictures of the laboratory and of field experiments formed an effective background. Such exhibitions are invaluable to the teacher and the modern farmer in bringing together the principal aspects of the work carried out at Research Stations.

University College of North Wales. Department of Agriculture. A. *Advisory and Research Work.*—Maps were displayed illustrating the soil survey of North Wales which has been carried out during the last few years. It has been found possible to classify the soils into a number of distinct types, and the distribution of these throughout the area was shown. Tubes containing samples of the different types of soil separated into their component parts by mechanical analysis were shown alongside the maps, and demonstrated clearly different proportions of sand, silt, clay, &c., in each soil type. To complete the information given by the soil map, geological, rainfall, and contour maps were also shown, while the relationship between these and economic conditions were brought out by crop maps, which also were used to show the relative areas under the plough in the different districts in 1914 and 1919.

On the botanical side specimen plants and turves illustrated the work which has been done in selecting and growing varieties in indigenous grasses hitherto unclassified, notably various types of fine-leaved fescues. The same exhibit also demonstrated the wide variations in the type of certain fescue seeds commonly put on the market under the same name.

A large amount of investigation in the improvement of poor upland pasture has been carried out in North Wales, and this was illustrated by specimen sods. The striking improvement effected by dressings of basic slag, ground mineral phosphate, and superphosphate with lime on upland pasture resting on poor acid soil was shown, and the comparatively small effect produced by applications of lime, limestone and superphosphate alone clearly demonstrated.

In view of the special importance of the oat crop in North Wales attention has been concentrated on this rather than other cereal crops, and samples of eighteen varieties under test at the College Farm in 1919 were displayed. Special attention was directed to the necessity of adjusting the rate of seeding to the size and density of grains of the different varieties. The reports giving the results of previous experiments were greatly in demand, and suggested a desire on the part of the Welsh farmer to take advantage of the work which has been done in recent years by various organisations to evolve new varieties suitable to special conditions of soil and climate.

B. *Extension Work.*—During the War the Department has taking a leading part in assisting the Board of Agriculture to develop cheesemaking in the more inaccessible districts of North Wales where previously milk had been utilised in a comparatively unproductive manner, and a chart showing the rate of development of co-operative cheese schools and cheese factories in the area, together with a table of the quantities of milk dealt with, showed clearly the immense development that has taken place. Photographs of some of the cheese schools and factories and samples of produce appeared to attract a good deal of attention.

The horticultural side of the extension work was illustrated by photographs, and there was a great demand for charts which had been drawn up by the horticultural staff to give in a handy, condensed form advice as to varieties and treatment of vegetable crops and different kinds of fruit.

C. *College Farm.*—As is natural in a stock breeding district such as North Wales live stock have always formed a prominent feature of the College Farm, and photographs, particularly of Welsh cattle and Welsh mountain sheep from the farm, which have won prizes at the Royal, the Welsh National and Smithfield Shows, formed a striking feature of the exhibit.

A display of wool designed to show the variation in the character of Welsh wool proved to be of special interest. Samples had been taken of the various classes of wool sorted by Government graders from the wool of the College flock. Some of this from pure Welsh mountain sheep was put in the same class as the best Shropshire hog, and the variation in value from this down to the poorest class of coarse Welsh was given by the price assigned by the grader. The exhibit clearly showed the possibility of effecting an immense increase in the return which the Welsh flockmaster receives from his wool.

D. *Live Stock Scheme.*—Until recently the live stock officer for the North Wales province was attached to the staff of the Department, and a chart, accompanied by photographs of some of the sires used, showed the extent to which the Board of Agriculture's live stock scheme had developed in the North Wales province.

The National Utility Poultry Society.—This Society is to be congratulated on being the first purely Poultry Association to organise an information Bureau at a Royal Show. The Stand appropriately placed in the Education Building was filled with plans, models of various houses, and appliances, together with photographs bearing on the many aspects of this now growing industry.

It is by verbal explanation and personal interviews that the advantage of these demonstrations can best be appreciated. The Society, with the exception of booklets, has nothing to sell and is not financially interested in any firm or farm, so is in a position to give absolutely impartial and independent opinion and advice. Their prospectus covers a wide field, and amongst the various headings were noted such activities as the holding of laying tests; this year, for example, between two and three thousand birds are being recorded for egg production under the management of Mr. J. N. Leigh at Bentley, Suffolk. Another breeding test for table poultry consisting of pure bred and cross bred stock, was being carried out at Horley, Surrey, and several smaller local tests were being arranged.

University College, Reading.—Research Institute in Dairying.—A joint exhibit from the Research Institute in Dairying and the British Dairy Institute, University College, Reading, was shown. It included a series of charts which demonstrated the bacterial content and the keeping qualities of commercial milk taken under the best conditions. From these it is clear that milk if taken with sufficient care could maintain a high degree of purity for at least 24 hours, even though it had only been cooled to a temperature of a deep well and had subsequently been subjected to the variations of temperature which a long railway journey involved. The milk from which these charts had been prepared had been taken under conditions which involved considerable expenditure of capital, especially for the construction of the milking shed. A further series of charts was therefore shown which demonstrated the possibility of producing milk of a high degree of purity in an ordinary cowshed.

Charts were exhibited which demonstrate that an appreciable number of apparently healthy cows in milk excrete tubercle bacilli in their fæces; that such bacilli may remain alive and active for at least twelve months when the fæces are stored in a dark place, and for at least four months when spread upon pasture land or present in liquid manure.

The exhibit also contained Tables illustrating the advantages of milk records in the improvement of milk yields of dairy herds. In one case where records had been kept for *one* year the average yield per cow in the herd was shown to be 616 gallons, and the average yield of the five best cows 807 gallons and of the five worst cows 445 gallons. In another herd where records had been kept *seven* years the yield per cow was found to be 830 gallons, and the average yield of the five best cows 1,059 gallons and the five worst cows 600 gallons. If the milk is valued at 1s. 6*d.* per gallon, the return per cow in the herd where records have been kept seven years is shown to be 16*l.* per head greater than that where records had been kept one year only.

Another chart showed the average yield from cows calving in the different months throughout the year. It was clearly demonstrated that cows calving during the winter months (November to March) gave larger yields in the succeeding milking periods than cows which calved from April to August. The increase in yield obtained by winter calving may range from 50 to 100 gallons per cow per annum.

In connection with the recording of milk yields three cheeses were shown which were made from milk from cows yielding respectively 400, 600, and 800 gallons per annum. Each of these three showed the actual amount of cheese which could be made from one-tenth of these quantities.

The exhibit also included various types of cheese which could be made from small quantities of milk, *e.g.*, smallholder, Caerphilly, Edam, Kingston, Coulommier and Pont d'Eveque. The quantity of cheese and butter which could be made from the same amount of milk was shown, and the relative market value of these products was demonstrated.

The University College itself also staged an interesting exhibit.

The Laboratory of Plant Pathology sent a series of cases and tablets illustrating the more commonly occurring fungoid and insect pests affecting timber trees, orchard and bush fruits, vegetable crops and cereals, these being especially prepared in the course of the advisory work carried on by the laboratory.

These each illustrated the characteristic damage or injury, by specimens, or accurately coloured drawings, of the pest and its life history, and in addition a brief and concise account, together with the most efficient means of control.

Demonstration models of injured plants were also included, and the arrangement of the whole subject matter was such as to be of an essentially practical nature, and so to be of the maximum benefit to the practical agriculturist and horticulturist.

National Museum of Wales.—From this Museum, at Cardiff, a very interesting and instructive exhibit was prepared. This consisted in the first place of a natural history exhibit of seventy-four cases of specimens of special interest to all who depend on the land as a means of livelihood. The exhibits were in two sections, each correlated to the other, as follows :—

(*a*) A large series of models and specimens, illustrating the most injurious insects to stock, food crops, forest trees, and fruit ; showing the effects produced by their ravages, and the various phases in their life history, thus indicating where it lies in our power to destroy them.

(*b*) A series of birds (mounted to show them in their natural surroundings) which prey upon the insects that injure crops, or destroy vermin, or check the spread of weeds, or in other ways assist the farmer in his work. This series consisted mainly of a selection of those birds which are beneficial on account of the large number of insects they destroy.

As illustrating the character of these exhibits, reference may be made, in the first place, to a few of the insect pests. These included insects dangerous to (1) stock, (2) food-crops, (3) forest trees, and (4) fruit crops. Of those injurious to stock, the well-known Horse Bot Fly and Ox Warble Fly may be cited. The life history of each was illustrated by specimens thus making identification possible in the various stages of the growth of these insects. That prevention is better than cure is well known, but in the case of an animal found to be suffering from the attacks of these insects, some knowledge of the methods employed for their extermination may be the means of saving valuable stock. Perhaps of all insect pests the wireworms are the most generally known and dreaded by the farmer. From their method of gnawing away at the roots of one plant and then passing on to another, they waste far more than they need for food. They live for several years in the grub stage, and during that time attack almost every kind of crop that is commonly grown. Methods for extermination vary according to the character of ground infected. It is very necessary to clean infected ground before a new crop is put in, otherwise the wireworms will take each crop in succession, and devour it till they change to the adult stage as Click Beetles, but the problem of how to do it, can hardly be said to have been solved.

Quite a number of our commonly distributed birds have a strong claim to protection, instead of persecution, by the farmer and agriculturists. Some live entirely on insects, while others depend mainly upon the various grubs, which would otherwise infest crops, for their food. Others again destroy slugs, snails, and vermin, or assist in keeping down the spread of weeds, by devouring their seeds. As many as 1,200 wireworms have been found in the crop of a single pheasant. Enormous numbers of caterpillars are destroyed every year during the breeding season by the Titmice, for the purpose of feeding their young. The farmer has many friends among the birds.

In the second place, there was an exhibit of Antique Farm and Domestic Appliances. The articles shown illustrated old-fashioned Welsh farming and farmhouse life. The uses of these articles were, as a rule, obvious, but some probably puzzled many visitors. One and all, they had an old-fashioned homely look, and, indeed, many were home-made. Most of them were obtained from mountain farms in Carnarvonshire, Breconshire, Glamorgan and Pembrokeshire. In the days before railways, these isolated homesteads had to rely very much upon the productions of their inmates and those of the carpenter and the blacksmith of the neighbouring village. The farmers and their men were resourceful, and made many things which would now be purchased. As might be expected, in these wood was the chief material, and iron was only used where absolutely necessary. Wooden ware, in fact, was a conspicuous feature of the home, in the form of platters, bowls, spoons, ladles, stirrers, cups, tankards, mortars and pestles, yarn-holders, &c.; but many of these had to be purchased as they were turned in a lathe, which very few farmers possessed. They are still in vogue in the west of Wales, and most of the turnery goods are to be seen on the stalls in Carmarthen and other market towns in that region. Spoons and ladles, however, were often home-made, and one or two unfinished examples came from an old Glamorgan farmhouse. Beehives, seedlips and other vessels of basketry were also made on the farms; so also semmets, which have long since gone out of use, and are now rarely seen. A semmet was a tambourine-like tray for carrying poultry-food, seeds, eggs, &c., about the farm. Great skill was required in straining the raw sheep-skin over the hoop, and tucking in the edges, hence a Gower saying—

> "If you can make a semmit without a crinkle,
> You'll marry a husband [or wife ?] without a wrinkle."

For want of space, only one plough could be exhibited. It was made in 1845, and was a late example of an old type, known in Wales, after the modern types were introduced, as the "long plough"—a ponderous implement with a wooden mould-board. The "long plough" succeeded a still more cumbersome implement in the 18th century, which did its work so badly that a writer of a century ago declared that a field ploughed with it looked "as if a drove of swine had been moiling it!" A hame and a yoke for oxen were very appropriate local exhibits, as the use of these beasts for drawing the plough continued later in Glamorgan and Monmouthshire than elsewhere in Wales. The driver, or rather "caller," walked backwards, holding their halters, and "encouraging" them with a goad. An old farmer in the Vale of Glamorgan repeated to the writer the various calls in a strong sonorous voice. The oxen were shod, but in some districts on the fore-feet only. The exhibited pair of unused "cues" with their nails were for another purpose. They came from an old smithy in Carmarthenshire, and belong to the time (some eighty years ago) when cattle from Ireland were imported in the vicinity to be driven to the great cattle-market at Wolverhampton. As the journey took about a week it was necessary to shoe those beasts whose hoofs would not stand the "tramp." The tethering rope used in the smithy was also shown.

A wooden spade sheathed with iron from North Wales was very much a bygone, and clumsy withal. These spades came down with little change from Roman times. Several sickles—always graceful objects—came from the north and west of Wales. They all have finely serrated edges, and so were saws rather than knives. In Glamorgan and Carmarthenshire corn crops, especially oats and barley, were also mown with a cradle scythe, which is an ordinary scythe fitted with a sort of light rake to collect the cut stalks and leave them in neat swathes ready for gathering to make up the sheaves. They are still used in some parts of the latter county. Two flails were shown. The thong connecting swingle and handstaff was generally of leather. In Wales, the fastenings are known as "ffust wrail," flail-withes—a name which indicates the primitive method, and the National Museum had the good fortune to acquire an old flail of this type.

Among other things exhibited, which to-day are obsolete or obsolescent, may be mentioned barley hummellers; a gorse-chopper—a ponderous wooden mallet equipped with a cruciform cutter for chopping gorse shoots for fodder; cow-bows; wooden baskets, still much used in North Wales for carrying food to the field, &c.; horns made from large strombus shells for summoning labourers for meals and otherwise; wooden scythe-riffs with horns to hold the requisite grease and the sand; a spring gun, fox-trap, salmon-spears, 17th century leather field keg, &c., &c.

These early appliances were particularly interesting when contrasted with the up-to-date things seen in other parts of the Showground, and brought back to older agriculturists many memories of the past. It is to be hoped that the farmers of Wales and Monmouthshire will send to the National Museum of Wales appliances and utensils which are out of date, and so help to complete the Museum's collection.

THE FORESTRY EXHIBITION AT THE CARDIFF SHOW, 1919.

THE Forestry Exhibition which before the War had been growing in size, interest and importance with each succeeding Show was, as might have been expected, not up to the old standard of excellence.

However, taking everything into consideration, there was a fair entry, and, thanks to the efforts of the Stewards and the Forestry Committee, there was some competition in most of the classes, and the many objects of general interest collected in the Forestry building and alongside were appreciated by the large number of visitors to the building each day of the Show.

The entries for boards were, on the whole, poor, and many appeared to have been exhibited previously and were not in over good condition. This is rather strange having regard to the very large quantity of timber felled and converted during the War, and it was a pity no one had secured good specimen boards of each of our woodland trees. Possibly next year will show better entries. It is impossible to show too often the quality of boards obtainable, even from our commoner trees, and this exhibition and competition, which bring before the general public the appearance, beauty and general excellence of home-grown timber for furniture and other purposes, must in the long run do an immense amount of good and create a demand, and it is to be hoped no effort will be spared to get these classes well filled at future Shows. There was fair competition in the gate classes, but nothing unusual in construction or fittings to comment upon.

The various bays in the Forestry building were filled. Cambridge University Forestry Department had a good general exhibit, which was both interesting and instructive. The special feature in this exhibit was timber specimens, and Mr. Stone, who was in charge, frequently demonstrated the porous nature and absorptive capacity of timber.

His Majesty's Office of Works sent one of the old oak purlins out of the roof of Westminster Hall showing the ravages of beetle. This purlin was taken from a bay between trusses 7 in. by 8 in. on the west side of the roof. It was 20 ft. 6 in. long, 1 ft. 2¾ in. wide, and 9 in. thick, and deflects 2½ in. in the centre.

Founded by William Rufus in 1099, Westminster Hall was repaired and provided with a new oak roof by Richard II. in 1399. This oak roof spans the 69 ft. width of the hall without intermediate supports, and ranks as one of the largest roofs in the world constructed entirely of timber.

The dangerous decay in the timbers was discovered during an inspection by His Majesty's Office of Works, and proves to have been caused almost entirely by the action of the larvæ of the Anobiid beetle (*Xestobium Tesseliatum*)—the death watch.

The larva bores in the dark, and its habits led to the preservation of a deceptive outer shell of sound timber on beams whose interior had been practically eaten away and gave the roof a fictitious appearance of solidity.

The repairs include cutting away the damaged timber and making good in solid oak, the whole of the timber being securely bolted to new steel trusses concealed in the ancient work.

The curiously warm tint of the old oak timbers is due to surface decay, and has caused the wood to be mistaken for chestnut. All parts of the roof are twice sprayed with liquid insecticide to exterminate the beetle.

The Forest of Dean School of Forestry had an excellent general exhibit, and the exhibit of ash handles, shunting poles and other turned articles by Messrs. Shepherd of Kendal was most instructive.

It was disappointing to find that an excellent exhibit of willows and osiers did not arrive in time for the judging. They were later the centre of attraction, and were undoubtedly most instructive.

The Timber Supply Department (Board of Trade) sent several articles of general interest, including toys, the product of village industries. One of the most interesting exhibits was the model coal mine, constructed to show the methods of timbering employed underground.

The gallery was erected by the kindness of Mr. Hann, who arranged for Powell Duffryn Colliery Company's timbermen to do the work, sent trams and lines and coal to add to the realistic effects produced. The pit props were supplied by the Timber Supply Department. Every species used during the War for mining purposes, both hard and soft woods, were represented, the general idea being to show these alongside French and Portuguese wood, which was used in pre-war days practically exclusively in the South Wales coalfield. Owing to the effective way the gallery had been darkened it was rather difficult to appreciate this side of the exhibit.

Taking into consideration the very heavy toll laid on home-grown timber of every description, but more particularly mining timber, the absence of owners and staffs from most estates on War service either with the armies or on other national work, the Society and all concerned are to be congratulated on the general excellence of the exhibition.

It is most desirable that this feature of the annual Show should not be allowed to drop, and although, as was anticipated, the exhibits were not so numerous or varied as in former years, there is every indication that next year the Forestry section will be as representative as at former shows.

H. A. PRITCHARD.

Cirencester,
Glos.

REPORT OF THE JUDGES ON THE PLANTATIONS COMPETITION, 1919.

THE competition this year was restricted to the counties of Glamorganshire, Breconshire, Cardiganshire, Carmarthenshire and Pembrokeshire, a district which is normally well wooded. The urgent demand for timber during the War has, however, made great inroads into the supplies throughout the country, and this district has felt the effect too. Nevertheless we were agreeably surprised during our tour to find that some timber had been left for future purposes, which is all the more fortunate in consideration of the fact that the country at large did in effect supply most, if not all, that was required of it during the latter stages of the War.

Many estates were undoubtedly unable this year to exhibit, whereas had there been no extensive and abnormal cutting they would have been strong competitors. It is also very probably due to the fact that hardwoods were quite eagerly bought for pit-props that there were no entries in the two classes for hardwoods as final crop, since these classes embraced the size of poles most suitable for props. Owners had made extensive clearings of these pole woods all over the area we visited, but heavier hardwood crops of 50–100 years' growth were in many places apparently untouched.

Generally speaking, in competitions of this kind one's attention is focussed upon the best plantations in a given area, and although many such plantations have been cleared recently in the district concerned, on the whole the standard of the best of this year's exhibits has not, in our opinion, been seriously lowered. However, in common with the rest of the country, repair planting and cleaning operations have necessarily for the most part been entirely neglected during the past few years, although we have noted many instances where energetic steps have been taken towards overtaking arrears in this respect.

In the interests of Forestry, it is gratifying to note that the abnormal demand of recent years has been effective in clearing many poor-class woods—that is, poorly stocked woods containing inferior quality timber—for which in the ordinary course of events there would have been little opportunity of getting a reasonable market. Now that they have for the most part been cleared, it is hoped these areas may be replanted with judiciously selected species, and the young woods may be given more careful treatment than has often been given in the past.

Hitherto the presence of large acreages of hardwood coppice has been an embarrassment to many estates, and owners who have cut down such woods to meet the urgent needs of the collieries have now a splendid opportunity for stocking these areas with the more valuable coniferous species, where suitable conditions exist, or as an alternative to convert into hardwood high forest. We saw examples of the former being put into practice, but noted a tendency in some cases to clear completely all new coppice shoots from amongst the conifers, which is not to be recommended, as it is absolutely necessary to keep the soil covered as completely as possible in order to prevent the incursion of weeds and rubbish, and the young coppice growth is fulfilling a very useful purpose in shading the soil and checking the drying-out effect of the sun on newly-planted species. It is sufficient to keep the coppice beheaded, so that the leaders of conifers can have free access to light and sunshine.

In passing we might draw attention to the current opinion in this country that timber grown from coppice stools is of inferior quality. We are fairly certain that there is no real foundation for this belief, and French authorities, who have closely studied this matter in the course of utilising timber produced from stools in woods which have been "stored" for generations, definitely state that they find no depreciation in quality if the stools are coppiced properly and close to the ground. Further, in many parts of this country it has been the method of growing oak and ash for generations, and the timber when grown under suitable conditions is, as far as one can tell, not a whit inferior to that grown as "maidens." During the War a very large quantity of ash grown from stools has, to our certain knowledge, been selected for aeroplane purposes as being of first quality.

The district covered by this year's competitions contains a number of large estates carrying a big area of woodland. The proportion of woodlands here was probably higher than the average for the country, due principally to the existence of large areas of land generally considered to be unsuitable for agricultural purposes. However, there are still enormous tracts of rough pasture stocked by only two or three sheep per acre which are undoubtedly suitable for afforestation, and it was gratifying to learn that many owners are contemplating the extension of present areas of woodlands by new planting. In addition we gained a general impression that those areas cleared by fellings during the past few years are likely to be replanted, and, having in mind the commercial possibilities of timber growing in a district with the rainfall and soil conditions of Wales generally, we were disappointed to find that there were so few estates employing trained foresters. In this country, unfortunately, we do not appear yet to have reached the stage in which forestry is generally regarded as a business which requires special knowledge and treatment, as do all other businesses. There is a special need for the training of foresters in nursery work, so that each woodland estate could provide its necessary planting stock on the soil where it is eventually to be established, and we venture to assert that no more remunerative piece of ground would be found on the estate than the one or two acres of forest tree nursery under skilled management. Forestry operations necessarily cover long periods, so that mistakes are carried over and become more pronounced as time goes on, hence the necessity for reducing original errors to the absolute minimum possible. Further, when a crop is once established, it will be made or marred according to the way in which it is treated. so that it is essential to treat it upon sound lines if the best is to be obtained. Owners of timber have experienced in recent years the difference in financial yield between a full crop of well-grown timber and a partial crop of poorly-grown timber, and we hope that experience may prove a good teacher, and that from the point of view of their own or their successors' pockets —quite apart from the value to the State—they will regard forestry in the light of a serious business rather than in the haphazard, happy-go-lucky manner unfortunately only too frequent in the past. Without entering into the question of woodlands as a financially sound proposition, it is sufficient to observe that a full crop of good-quality timber pays much better than half a crop of coarse timber under similar conditions. One cannot emphasise too strongly the necessity for some well-thought-out scheme for dealing with any considerable area of woodlands or land to become woodlands. No one would propose to undertake a building scheme without very definite plans, and yet there are comparatively few instances in which there is anything definite upon paper relating to proposals for working woodlands, which, after all, is nothing more nor less than a building scheme. During our tour we found only one estate with written plans, which in this case had been formulated by a trained forester. All this and much more has been often repeated, but we do not apologise for again emphasising the points, for the present time is so important on account of the large areas that have been cleared, and which, we hope, may be replanted with species which will become a source of profit and pleasure to the owner, and a safeguard to our nation in the future by ensuring a reduction of imports and a reserve of timber in emergency.

The number of entries in this year's competition was 24, which, in view of the circumstances, was as many as might have been expected. In Glamorganshire there were four entries, Breconshire ten, Cardiganshire nine, Carmarthenshire one, and Pembrokeshire none.

Owner	County	No. of Class Entered
Exors. Miss Talbot . .	Glamorganshire	3, 5, 7
Earl of Plymouth . .	,,	6
Major Gibson Watt . .	Breconshire	6, 6, 7
Lord Glanusk . . .	,,	3, 4, 7
Birmingham Corporation .	,,	3
Capt. Christy . . .	,,	3
Capt. Evans . . .	,,	6, 6
Earl of Lisburne . . .	Cardiganshire	3, 4, 5, 5, 6
Mr. Waddingham . .	,,	3, 4, 4, 7
Mrs. McClintock . . .	Carmarthenshire	6

In Classes 1 and 2, the hardwood sections, there were no entries. This was a disappointing feature, for although in the main the woods in these counties are coniferous, a very considerable amount of good hardwood timber has been cut during the War, and we think there must still be a good deal remaining. Generally speaking, we have now arrived at the stage when it is fashionable to plant conifers and almost everywhere to neglect the hardwoods, probably due to the quicker and higher financial yields obtained from conifers. It is our opinion, however, that certain hardwoods grown on suitable soils undoubtedly give good results, in fact, better results under certain conditions than will conifers. Ash is very short just now, and likely to become more valuable in the future, and we hope to see it planted largely. Poplar, owing to its suitability for veneers and plywood, is becoming more valuable, and there is no reason why it should not become a permanent feature in woods instead of being put in as a single specimen here and there. Now that beech has been adopted by some railway companies for sleepers, we trust that it will come into greater service and its former uses be considerably augmented. There is a feeling that oak does not pay to grow, but the timber will always have a demand when of good quality on account of its general utility for estate purposes. Elm is a much underrated timber and deserves more attention.

As a matter of general policy it will be a misfortune from many points of view if hardwoods are neglected, and may also lead to financial loss to the owners if conifers only are planted everywhere.

In Class 3 there were six entries for plantations of conifers which have been weeded or lightly thinned, including the removal of dead or dying trees, of not less than ten years' growth and not less than four acres in extent.

The silver medal was awarded to the Birmingham Corporation for a plantation situated on the south side of the Caban Coch Reservoir in the Elan Valley, near Rhayader, Radnorshire, seventy-three miles from Birmingham.

The Birmingham Corporation have in recent years planted over 1,000 acres of land on their Water Catchment Area of 50,000 acres in the Elan Valley, of which 115 acres have been planted during the past three years, but, being the only plantation in Breconshire, this constituted the sole entry for the estate.

The plantation of seventy-nine acres consists mostly of pure European larch, with Scots pine on the higher elevations, which act as a shelter belt on the west and north-west sides. In addition there is one small plot of about 100 Japanese larch and about an acre of scrubby oak, with birch occupying a strip in the middle of the plantation, where the ground is covered with a thick layer of sphagnum moss. Two-year one-year seedlings were notched at a horizontal distance of 4 ft. apart during the season 1904-5, the plantation being thus 14 years of age, and the cost of planting, including upkeep for two years, was 4*l.* 1*s.* 2*d.* per acre. The total amount expended on fencing against stock, which also enclosed 50 to 60 acres of old woods adjoining, was 154*l.* 15*s.* 8*d.*, at the rate of 1*s.* 4½*d.* per lineal yard, an approximate cost of 23*s.* per acre. No other expenditure has been incurred, and the ground was given no previous preparation.

The soil consists of a thin layer of sandy loam overlying shaly rock, and carried a ground vegetation of heather and associated plants on the upper part, with bracken up to about 1,000 ft.

The plantation is situated at an elevation ranging from 840 to 1,200 ft. above sea-level, on slopes varying from steep to very steep, with a main aspect of north-west.

As a whole the crop is very flourishing, and, considering the obvious difficulties in establishing woods under these conditions, this was easily the best entry in the class.

The most successful species is the Japanese larch, and the small experimental block forms a good indication of the possibilities of this tree under conditions which normally one would be tempted to rule out as unsuitable. The saving feature, however, is a fairly heavy rainfall of 63 in. per annum. Although as a crop it could not be described as of first-quality class, it is very much better than the best of the adjoining portions of European larch. The average size of the Japanese is 5 in. quarter girth at breast height and 22 ft. high to the tip, whilst the largest girthed 6 in. and measured

27 ft. to the tip. The crop has closed up, killed the surface vegetation, and is forming leaders of as much as 2 ft. in height per annum. The trees are all very healthy, fairly regular in size, and show no sign of insect or fungoid pests.

On the lower slopes the European larch averaged 4 in. quarter girth and 18 ft. high, but a complete canopy has not yet been formed, as there is not the same evenness in the size of the trees as in the case of the Japanese, about one in four tending to become dominant at the expense of the rest, and the partly dominated trees are badly infested with *Argyresthia*. The height growth gradually diminishes with altitude, and at about 1,100 ft. they average about 14 ft., or about 2 ft. higher than the Scots pine adjoining. The crop also becomes more patchy owing to frequent outcrops of rock on the surface. The European larch are affected with canker disease, and owing to the scarcity of labour the worst specimens have not yet been removed. In 1910 the large larch sawfly made its appearance, and the means used to combat it consisted of hand-picking and the hatching of parasites (Ichneumon Flies), carried out under the direction of the Board of Agriculture. We saw no traces of the sawfly, but observed that damage caused by the larch shoot boring moth (*Argyresthia lævigatella*) is becoming more prevalent.

The Scots pine belt, consisting of about 10 rows planted 3 ft. by 3 ft. apart, is growing well and fulfilling a useful purpose, but trees of this species, at the highest elevations—planted, as they are, on the shallowest soil and in the most exposed parts—are generally not flourishing.

In view of the splendid results obtained with the Japanese larch, it was disappointing to learn that it is not proposed to plant further areas of this species, and we recommend that this decision be reconsidered. The special feature of the Japanese larch is its power to recuperate quickly after transplanting, and in all cases where we found it growing in company with the native and European larch it was the dominant tree, and was by far the most vigorous even in this exceptionally dry season. The much heavier crop of needles shed annually by the Japanese ought to be a special recommendation for water conservation on these rocky hillside plantations, as perfect humus conditions exist in this small area of Japanese under notice at 14 years of age.

On other portions of the Catchment area we saw some very flourishing young plantations of Douglas fir, larch, Sitka spruce, Corsican pine, and noted a large plantation of Scots pine at about 1,400 ft. elevation, which is growing splendidly in spite of being very exposed and situated on a plateau. The species which impressed us most favourably was Douglas fir, which grows very rapidly on somewhat sheltered although very rocky slopes.

The Second Prize was awarded to Capt. H. A. Christy, Llangoed, Boughrood, Brecon, for a larch plantation situated at Erwood.

This plantation consists of a mixture of European and Japanese larch, in the proportion of about four to one, covering 5·8 acres and being 10 years of age. It is situated at an elevation of 700 ft. on good loam believed to be drift from Silurian and old red sandstone, on a gentle slope with a south-east to south aspect, and having a rainfall of 30 to 35 in. per annum.

The trees were pit planted at 4 ft. 6 in. apart in and between the rows. There is no record of the costs of any operations, but the area was already enclosed by fences and no ditching had been necessary.

The Japanese are the dominating trees, the respective dimensions being :—

Japanese—18 to 20 ft. high and 3 to 3¼ in. quarter girth T.O.B. at 4 ft. 3 in.

European—14 to 18 ft. high and 2⅝ to 2¾ in. quarter girth T.O.B. at 4 ft. 3 in.

It was quite possible to pick out a Japanese larch at ground level by simply noting the extra thickness of its stem.

On the upper portion of the plantation the crop has covered the ground well, and killed the surface vegetation except for small patches of persistent bracken. In other portions there is a fair amount of coppice shoots, and these have allowed a strong growth of bramble and briars. Cleaning operations had been started with German prisoners a short time before our visit, and in our opinion were being carried out much too thoroughly, as direct sunlight was on the surface of the ground in many places. We suggest that it is an advantage to leave coppice shoots on the ground so long as the principal crop is not harmed in any way, simply cutting back all which appear likely to affect the leaders of the crop trees, but grass and bracken should be cut to allow circulation of air round the stems.

Slight attacks of larch canker and *Argyresthia* were present on the European but absent from the Japanese larch.

Class 4.—Plantations of conifers from the end of the cleaning stage up to the completion of the second thinnings, in which class there were four entries.

The Silver Medal was awarded to Mr. T. J. Waddingham, Hafod, Cardiganshire, for Alltduhanog Plantation, consisting of 40 acres of pure European larch at an elevation of from 500 to 1,000 ft. The 35 years old crop is situated on a very steep slope (about 50 per cent. or 1 in 2 gradient) facing west to north-west, with a very thin light loamy soil on slate rock, and an average rainfall of 66 in. per annum explains the rate of growth under the conditions. The previous crop was scrub hardwood, a good sample of which is still standing adjacent to the plantation, and the present wood is an interesting example of the possibilities of hundreds of acres of similar scrub throughout the mountainous districts of this country.

There is no available history of the plantation, but the trees would appear to have been planted at 3 ft. 6 in. distance after the scrub was removed, and throughout its life has been skilfully treated, so that now it consists, apart from a small wind-damaged portion at the foot, of a well-distributed fully-stocked crop, with very few gaps in spite of the rugged nature of the ground. The trees are vigorous and very healthy and there is no canker, whilst the surface vegetation consists of moss, some grass and hyacinth, with a little foxglove and bracken in places.

As is to be expected, the best trees are to be found at the lowest elevations, the average dimensions of which are 48 to 50 ft. long by 4½ in. quarter girth, and the crop consisted of quite 520 trees to the acre, equal to 3,600 cubic ft. T.O.B. per acre, whilst the largest trees measured as much as 60 ft. in length by 6 to 6¼ in. quarter girth at mid-height. These trees are straight and clean and show very little taper.

At 900 to 1,000 ft., however, where the trees are much exposed, the average dimensions are 35 ft. high, with a quarter girth of 3½ in., equal to 3 cubic ft. T.O.B. The average trees were considered to be a mean of these two sets, and, with 500 trees per acre, the volume per acre for the whole wood is estimated at 2,550 cubic ft. under bark. The trees are clear of root fungi, forming heartwood normally, and promise to become a valuable stand of timber when mature. There is no doubt whatever that a steep site is peculiarly favourable to the growth of larch, and if this is associated with a copious rainfall, as in this instance, there are few more profitable species than the larch on slate formations.

During the War some thinning has been done, and the poles sold as pitwood. In view of the steepness of the slope, it is interesting to note that no difficulty was experienced in the extraction of these thinnings, which were taken down the slope till they reached graded paths leading to the exit from the wood.

On this estate there is a ready market for small larch poles 12 to 18 ft. long, cut off at 1 in. top diameter, such as are obtained in the first thinnings, at a price of 3*d.* and 4*d.* each. These are used by local farmers for fencing, but fortunately it has not encouraged over-thinning of this plantation, although the same cannot be said as regards some younger ones.

This area was also awarded the gold medal of the Royal English Arboricultural Society for the best plantation, for although it may not be producing the largest volume of timber per acre amongst the woods visited, it is undoubtedly the best example of sylvicultural management, and this feature, in combination with the present extremely promising crop of really first-quality timber, enabled us to award the prize to it.

The bronze medal was awarded to Lord Glanusk, Glanusk Park, Crickhowell, for Caehunt Plantation, which consists of thirteen acres of pure European larch of twenty-two years' growth, standing upon a deep sandy loam on the old red standstone formation, situated at an elevation of from 800 to 950 ft. on a gentle slope with a south-west aspect. Two-year two-years transplants were notched at 5 ft. apart in and between the rows. There are no records of the cost of operations in forming this plantation, but under similar circumstances the cost was 3*l.* 19*s.* per acre for planting, and 12*s.* per acre for cleaning and replanting for the first four years.

The latest thinning was made during the early part of the present year, which yielded the following measurements and particulars :—

Total No. of trees, 8,900

Total volume in cubic feet T.U.B. 22,288

Diam. at 4 ft. 3 in.	4 in.	5 in.	6 in.	7 in.	8 in.	9 in.	10 in.	11 in.
No. of Stems .	1,338	2,525	2,505	1,470	731	248	65	18

Average total height, 43 ft.

No. of trees per acre, 676.

Volume per acre, T.U.B. 1,694 cubic feet, measured to 2 in. top diameter.

In the thinnings a total of 108 tons of pitwood was removed.

The thinning of this plantation has been delayed too long, and as a consequence there are still a number of "whips" to be removed gradually. On the lower portion, which is the more level and probably becomes sodden at periods of heavy rainfall, winds have done much damage to the standing crop, and there is a strong growth of grass, but on the upper and steeper portion, where the wind damage has been less severe, the ground is well covered and vegetation has been killed. Here, however, further thinnings are required, and the trees are sufficiently vigorous to respond to treatment.

Our criticism of the present treatment of this wood is that there is a marked tendency to increase the size of the gaps, leaving the remaining trees unevenly distributed in groups throughout the wood. A factor probably responsible in some degree for the irregular spacing of the crop is that canker has been very bad on the lower part of the wood, and many diseased trees still remain.

A very interesting method of pitwood extraction on panniers carried by a gang of mules was seen in this wood. The poles are all cut to 6 ft. lengths and down to 2 in. top diameter, and are stacked by the edge of a rough track in measured cords or half cords, an area of 6 ft. long by 6 ft. 6 in. wide by 2 ft. 6 in. deep, and containing about 27 cwt. of pitwood. The procedure is then to let the carrying out of poles by contract to mule owners, who have as many as six animals working under the guidance of one man. The mules have slings or pannier cradles attached to their saddles, which are evenly loaded by the man, each mule taking about 4 cwt. at a journey down through the trees and out to the cart track with a marvellous amount of care, it being a very rare occurrence for the load even to touch a tree in passing along, notwithstanding the fact that the loads project 18 to 20 in. each side of the mule. It appeared to be a very economical method of extraction, and also greatly reduced the risk of barking the standing poles, as often happens when the full length poles are drawn out.

Class 5.—Best example showing systematic management of existing woodland area, including the renovation and conversion of unprofitable wood into a profitable condition.

In this class there were four entries, and the silver medal was awarded to the Margam Estate for a scheme relating to Cwm Kenfig Wood.

The whole wood covers some 200–300 acres situated at an elevation of 600 to 800 ft. on a gravel soil overlying Pennant sandstone and coal measures. The former crop consisted mainly of old oak coppice with larch and Scots pine thinly distributed.

Formerly the wood had been dealt with piecemeal, and portions were cleared and replanted with conifers, the species employed being Norway and Sitka spruce, larch and Scots pine. Some ten years ago, however, it was decided to treat the wood systematically, and accordingly an area of seventy acres on the leeward (E., S.E.) side was marked out for clearing and replanting. The standing crop on this section, which consisted of oak coppice solely, was sold for what it was worth, care having been taken to leave a strip on the outside for a protective belt, as this particular area is fully exposed to the winds of the Bristol Channel, from which it is about three miles distant, and situated on the first rise from the Channel at an elevation of from 600 to 800 feet, with an annual rainfall of 44 in. After the oak had been cleared the strip behind the protective belt was planted with black American spruce (*Picea nigra*), followed by a strip of Douglas fir, and the rest of the area was planted with Scots pine and larch with 10 per cent. beech in mixture. Notch planting was adopted, and the plants used were two-year two years put in at 3½ to 4 ft. apart at a cost of 6*l.* per acre, no fencing being necessary. The annual cost of cleaning and replanting for the first four years was 10*s.* per acre, and no pests were evident.

The spruce and Douglas served the purpose of an additional shelter belt for some years, but the latter have now reached the top of the oak, and are consequently feeling the effects of the winds, and it is doubtful if they will do much more in such an exposed situation. At the top of the plantation Scots pine are now 9 to 11 ft. high, and growing well, beech 7 to 10 ft. high, and growing well, and European larch 10 to 12 ft. high, growing fast. The Scots pine had produced last season from 18 to 24 in. leaders, as against 15 to 18 in. in the case of larch. In the lower half a proportion of the larch is Japanese, which have thrived far better than any other species, being now at ten years of age as much as 25 ft. high, with 4 in. quarter girth, as compared with 18 to 20 ft. by 2½ in. of the European larch, and 20 ft. in height of the Douglas. The beech is growing well all over the plantation, but the Scots pine is getting away very slowly on the lower part of the wood and is very coarse, and, as a result, there is a profusion of brambles and other weeds and stool shoots of oak, which in many places require immediate attention.

During the past few years the cutting of the oak coppice has been extended on the windward side, a belt being left between the young plantation and the clearing to continue as a shelter. It is proposed to plant the area recently felled with conifers, in order to join up with some flourishing plantations of larch and other conifers, which are already formed at the lower end of the valley. Owing to the proximity of the coal pits, it is anticipated that there will always be a ready demand for pitwood, and it has been decided to grow pitwood only, for which purpose a rotation of thirty-five to forty years is to be adopted. In view of these facts, we would recommend that the mixtures of Scots pine and larch be greatly modified in future, and that as the rainfall is as much as 44 in. per annum, the following species be planted:—

Douglas fir on the lowest and most sheltered spots, with Sitka spruce and black Italian poplar in the moister places; Japanese larch and Sitka spruce at medium elevations, and Corsican pine on the highest parts of the area.

By adopting these faster growing species it will probably be found that the pitwood rotation may be reduced, and a considerable improvement in the financial yield be obtained.

We were interested to find cases where Norway spruce appeared to be intolerant of the sea breezes, which caused the foliage to turn brown, whereas specimens of Sitka spruce showed no ill effects from the same exposure. Proofs are accumulating year by year of the hardier nature of the Sitka as against the Norway spruce in standing exposure to severe gales, and there is no doubt that the former tree is the better as a rapid pitwood producer.

The bronze medal was awarded to the Earl of Lisburne, Crosswood, Cardigan, for Tyncwm and Lady Enid Plantations, which together form a scheme for regeneration.

Tyncwm is about 10 acres in extent, formerly consisting of old mature hardwoods of many species and some large silver fir. Being less than half a mile distant, and in the direct view of the house, it was considered undesirable to clear fell the whole of the wood, consequently a gradual process of removing the large trees followed by underplanting and filling up the gaps was decided upon in regard to the major portion and a clear felling and replanting of the remainder which was situated out of view.

In the former section a number of trees were removed, and eight years ago was underplanted with silver fir, larch, and beech, with some Douglas fir in the more open spaces, and Corsican pine on the south-west margin of the wood. Of these the silver fir is the most successful, the plants having got away well from the start, and some are now putting on as much as 18 to 24 in. in height each year. The beech also is doing well, but the larch and the Douglas show all the signs of trees suffering from lack of light, except in a few cases along the ride and towards the East, where fewer old trees were allowed to remain. There is also an excellent crop of natural ash seedlings, a fact directly attributable to the exclusion of rabbits by fencing.

While not desirous of suggesting for a moment that the amenity of the woodland should be disturbed, yet it certainly appeared to us that quite 50 per cent. heavier fellings over the area would have resulted in no alteration of scenic effect, and the additional light given to the young crop would have been of immense benefit. Another point with which we could not quite agree was that the underplanting was promiscuous, which in a few places will cause much trouble later owing to the necessity for extracting the old trees as the young crop grows to form the crop.

A few spaces across the wood left unplanted would have been sufficient, and the old timber could have been dropped into these and extracted much better A further good system of dealing with this class of woodland, especially on a level site, is to take out the entire centre of the wood and widen the circle periodically, whilst the gap caused is not discernible from outside the wood.

In the latter section a mixture of larch (Japanese and European), Douglas fir, Sitka and Norway spruce, and silver fir, with an occasional beech was planted. The most thriving species are Japanese larch, Douglas fir, and silver fir, in order of merit, the other species doing only fairly well. There were many trees killed by root fungus (*Trametes Radiciperda*), which seemed particularly virulent in its attacks upon Sitka spruce.

Lady Enid plantation covers 11 acres of ground, formerly carrying a crop of old mixed hardwoods similar to Tyncwm, from which it is separated by a strip of hardwoods which corresponds with the original state of the two plantations. In this case, however, the wood was almost clear felled, as a change in the direction of the slope cuts it off from direct view, and was replanted eight years ago with European larch, occasional Scots pine, Norway spruce, and Colorado Douglas. In addition, there are a number of seedling oak, sycamore, and other hardwood species. The larch are growing fast, have closed up well, suppressed all other conifers, and killed the first crop of weeds, which is now followed by wood grasses, oxalis, and a little bracken.

Whilst some of the young oak seedlings are growing very rapidly and should be encouraged, the other hardwoods ought to be kept subservient to the larch. There is a good deal of canker present, and much room is taken up by unremoved oak, which are usually scrubby, and very branched trees covered with epicormic shoots, and, in some individual cases, monopolise at least 60 square yards of ground. This latter feature of estate forestry cannot be too strongly condemned, especially in cases where only single trees are left.

It is understood that the intervening block of hardwoods is to be regenerated in course of time, as the trees are mostly over-mature, and it is recommended that—

(*a*) Where a number of trees are required for ornament and shooting purposes, clearing should be effected by large groups or by strips in preference to promiscuous felling over the whole area.

(*b*) Where trees are not required for ornament the area should be completely cleared, and no older trees allowed to remain, as in Lady Enid Plantation.

We also suggest that a gradual thinning be commenced straightaway in Lady Enid Plantation, removing the oak scrub standards, the most badly cankered larch, and the suppressed trees of other species. The large gaps might be filled with Douglas or Japanese larch, and the smaller gaps with beech.

Class 6, Plantation of not less than two acres of any of the rarer conifers, pure or mixed, of not less than five nor more than 30 years' growth. There were seven entries in this class, of which the best was far ahead of the others.

The Silver medal was awarded to Major J. M. Gibson Watt, Doldowlod, Rhayader, for a remarkable plantation of 4¾ acres of Douglas fir at Erwbant. It is situated on a steep slope facing north, at an elevation ranging from 1,000 ft. to 1,340 ft. above sea level, the soil of which is a medium loam on shale. The trees were planted 30 years ago at five feet apart, in the proportion of one Douglas fir to eight European larch, behind the shelter of a wooded belt about two chains wide, consisting mostly of old larch, running along the west and south sides, and it was undoubtedly due to the shelter of this belt that the wood was successfully raised.

The ground was cleared of bracken, pitted, and trees planted at a cost of 6*l.* per acre, which was the only expense incurred since the plants, purchased as seedlings and lined out on the estate, did well from the start and there were no blanks to fill up.

From the early stages the Douglas got well away, and the larch became totally suppressed some years ago. The remains of the latter are being removed, and there only now remains a pure crop of Douglas standing at 15 ft. apart, practically every one of the original trees being present still. The canopy is very dense, and the ground devoid of surface vegetation. The crop is very even, but occasionally a tree is found that should be removed in order to make more room for larger neighbours. Although planted so far apart, the side branches of the trees are now dead up to an average height of about 20-25 ft., but it is very evident that the larch never did much toward cleaning the Douglas, for in many cases these dead side branches had a diameter of as much as 1 to 1½ in. at the spring from the bole.

The size of the trees does not vary much from the bottom to about two-thirds up the slope, but above this they begin to fall off both in height and in girth, as the following measurements show :—

	Lower and medium slope	Upper slope
Av. quarter girth at B.H.	15¼ in.	10 in.
Av. total height	65 ft.	55 ft.

while occasional larches at the top of the slope measure 10¼ in. quarter girth and 48 ft. in height.

The largest Douglas, found about two-thirds up the slope, was estimated to contain 45 cubic feet quarter girth measure T.O.B., whereas the volume of the average tree for the whole wood was estimated at 26 cubic feet, so that with about 190 trees per acre the estimated yield of Douglas fir timber per acre was 4,940 cubic feet in 30 years.

For the most part the trees were straight, and considering the distance at which they were planted, they did not taper excessively. Exhaustive measurements were taken of a representative tree with the following results :—

Height from ground	¼ girth T.O.B.	Period of growth
5 ft.	16 in.	
10 ft.	13½ in.	
20 ft.	11¾ in.	9 years.
30 ft.	9½ in.	
40 ft.	7 in.	7 years.
50 ft.	4 in.	6 years.
66 ft.	tip.	8 years.

This is equal to 36 cubic feet T.O.B.

Douglas fir is generally credited with being most intolerant of exposure, and, as undoubtedly the successful growth of this plantation at such a high elevation is largely if not solely due to the presence of the larch shelter belt, we have here a very interesting example of the value of shelter belts. In the first place the old larch belt would be clear of branches up to a good height, and although larch, as a shelter belt at high elevations, is not recommended, this example goes to show that almost anything that will simply break up the currents—quite apart from absolutely stopping the winds—is very useful in establishing young plantations in exposed situations, and nothing should be despised. Secondly, the width of the belt was about two chains, and the width of the wood protected by the belt about seven chains, but the trees on the extreme edge showed no sign of wind damage as compared with the rest of the trees. In other words, even at exposed elevations the "kicking" effect of a shelter belt such as this is sufficient to protect a wide strip of some 150 yards at least. Thirdly, we have some indication of the wind resisting powers of Douglas fir when once it gets well established in pure woods. According to information supplied, the larch belt was felled some 14 to 15 years ago. Now it was very distinctly noticeable that the trees as a whole had suffered a check in height growth during the years immediately following the felling of the belt. Taking the measurements of the single tree given above, we find that at the age of 16 years it was 40 ft. high, or an average growth of 2½ ft. per year, whereas in the next six years the growth was only 10 ft., or an average of 20 in. per year. But it was very distinctly shown that in the 17th and 18th years of growth the height had only increased by 9 in. per year. The check was only observable for these two years, and the average rate of growth for the following four years was 2 ft. 1½ in., and during the last eight years an average of 2 ft. per year.

Thus it is reasonable to conclude that, when well established, vigorously growing Douglas is not seriously affected by winds, and that the ill effects seen in various places are probably due to the fact that the trees were not protected for a sufficient length of time to allow them to become really vigorous.

As regards future management of the wood, we suggest the removal of the thin stemmed Douglas and suppressed larch, and also where double leaders of Douglas occur, one should be shortened well back to, say, 10 ft. from fork, so as to avoid any tendency to split the tree during gales.

The plantation would then be carried on with a crop of about 160 trees to the acre until maturity, and we may reasonably expect the annual increment to average quite 1½ cubic feet per tree, or 240 cubic feet per acre per annum, and assuming clear felling to take place at 45 years, the crop would then be 8,540 cubic feet per acre.

The timber will never be of first-class quality, and it will at this age be of suitable size for easy transportation and conversion into railway sleepers, for which it will be suitable.

We noticed some felled Douglas fir lying on the adjoining hill, and measured one as follows:—Crosscut end, 6 ft. from butt, showed 22 annual rings, and measured 16 in. diameter under bark, the width of rings in some cases being three-quarters of an inch.

The Bronze Medal was awarded to the Earl of Plymouth, St. Fagans, Cardiff, for a plantation of Sitka spruce at Ystrad Mynach.

This plantation of 10¾ acres is situated on thin, sandy soil, overlying coal measures, with Pennant sandstone cropping out at the surface very frequently, at an elevation of 450 ft. above sea level, with aspect E. The previous crop of old coppice, with some conifers, was, judging by the portion of untouched wood, as poor as could be imagined. The plants were notched in as two-year two years, at 4 ft. apart, at an approximate cost of *5l.* per acre. Apart from some hollows on the lower side, which are peaty, the soil is extremely dry, and without the knowledge that the average rainfall is 50 in. per annum, one would feel that Sitka spruce is almost the last species to plant in such a situation. However, with a good rainfall as a saving grace, the trees are growing very well, and some are putting on as much as from 2 ft. 5 in. to 2 ft. 9 in. per annum in height. The trees, which were planted eight years ago, are beginning to close up, and average about 7 ft. in height, whilst individual trees run up to as much as 11 ft. high. There is an abundant growth of coppice shoots of a large number of species, which have been cut down from time to time, the last clearing being made two years ago. The plantation has suffered on several occasions from fire, caused by railway engine sparks, and alongside the public road many trees have been wantonly damaged, but until very recently such damage has been repaired.

The cleaning operations must have been expensive, and we suggest that from now onward it will be sufficient to behead only those coppice shoots that interfere with the proper growth of the Sitka spruce, and allow undergrowth to remain. Great care must be exercised to keep the soil covered throughout the life of this wood, otherwise the crop may become unthrifty.

Before leaving this class, we desire to refer to about two acres of Douglas fir on an old larch wood site forming a portion of the Gaer plantation on the estate of Capt. J. D. D. Evans, Ffrwdgrech, Brecon.

The Douglas fir, two-year two year, planted 4 ft. by 4 ft. in spring, 1913, on rich loam over disintegrated old red sandstone rock, is situated at an elevation of about 500 ft. on very steep ground, in a sheltered spot, with a south aspect. The crop is an exceptionally fine one, with a very few failures, and the trees are growing at an enormously rapid pace, and have completely smothered the ground. The average height of the trees is 15 ft., whilst individual specimens reached as much as 21 ft. high by 2⅜ in. quarter girth. A growth of 4½ ft. to 5½ ft. last year was quite common, and one individual put on the phenomenal growth of 5 ft. 7 in., and had a diameter of 1⅛ in. at bottom of growth. This shows signs of becoming a remarkable crop, and it was with regret that the judges had to disqualify it owing to the fact that it was only a selected portion of the plantation.

Class 7.—For the best managed woodland estate, not less than 1,000 acres in area, the judges to take into account the production of timber, ornamental planting, planting for sporting purposes, and the improvement of residential amenities and proper management of hedgerow timber.

In this class there were four entries. The conditions on many estates this year were exceptional, due to the extensive cutting operations that have been taking place during the War. Some owners, for instance, have cut very considerable quantities of timber, leaving practically nothing standing, whereas others have been able to retain a considerable portion of their woods. Accordingly, in judging for this class, many new factors have come into account, and it has not necessarily been regarded as a point in favour of management that a large proportion of timber has been retained.

The provision made for replanting has also taken a conspicuous place in coming to a decision, and in this particular we have been, perhaps, more favourably situated as compared with judges in other years by having an opportunity of examining plans for regeneration of cleared areas.

Further, sporting facilities on all estates have been neglected during the War, and the reconstruction of this item of woodland estate comes into the question very largely.

Generally speaking, also, there have been larger fellings of hedgerow timber than previously, so that the re-stocking of hedgerows has a stronger relation to the competition than formerly.

Another point for consideration was the question of extending the present acreages of woodland, in view of the necessity of creating a further reserve of timber in the country.

We awarded the gold medal to the estate of Lord Glanusk, Glanusk Park, Crickhowell, on which there is a total acreage of 1,359 acres of woodland, divided into five working circles, of which the largest is on the home portion of the estate, known as the Myarth, with 498 acres.

On the estate, generally, considerable quantities of timber have been felled during the War, as may be judged from the fact that 420 acres of pitwood alone have been cut, and accordingly all existing plans for the working of the woodland were upset. This entailed reconsideration of the whole of the woodland area, and a working plan report has been drawn up by the forester, giving the present position of the woodlands, the contents of the various plantations, and a rough sketch of the proposed treatment in the near future. Accompanying the report was a stock map showing the plantations coloured according to species, each plantation bearing a number.

We were informed that many of the best plantations had been felled, but it was interesting to note that there were quite a number of plantations of good quality still standing. A large majority of the plantations are of conifers, principally European larch, which species grows at a remarkable rate, situated as it is on rich soil on the old red sandstone formation, with a rainfall of about 42 in. per annum, and usually with good slopes to carry off surplus water. The elevation of the woods varies between 300 ft. and 1,200 ft. above sea level, and growth at all elevations is good. Little damage is experienced from exposure, although we noted cases in which thinning had been delayed too long, and when actually made the wind had entered, blowing down considerable quantities of trees. We feel that the thinnings in these conditions were too drastic, and suggest that where woods have been left for a considerable period untended in these broken hilly districts, they should be treated very gradually, otherwise wind is sure to get in and seriously reduce the number of standing trees.

The Japanese larch on the estate are also growing well, and both species of larch appear to reach initial pitwood stage at with judges in other years by having an opportunity of examining plans for regeneration of cleared areas.

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The Japanese larch on the estate are also growing well, and both species of larch appear to reach initial pitwood stage at about 17 to 18 years old, and a good market exists for small poles for fencing. Generally speaking, it has been decided that larch should not be planted below an elevation of 400 ft., as Douglas fir is found to grow much better below this elevation, and there is some risk from wind damage in planting the latter higher up.

Larch has, in the past been generally grown pure, but of late years beech or sweet chestnut has been introduced either at the time of planting or after the second thinning, with a view to soil preservation.

Of other conifers, Douglas fir, Norway and Sitka spruce, Scots, Corsican, and Austrian pines grow well in plantations, and we saw several fine specimen trees of silver fir. It is proposed to plant areas at the higher elevations and on the poorer soils with pines. A very good plantation of 8½ acres at 600 ft. elevation facing N.E. contained pure blocks of Japanese and European larch and Sitka spruce, planted in 1916. The soil was poor disintegrated sandstone, and the slope was 1 in 3 to 2½. The Japanese were thriving and leaders of 3 ft. 7 in. were found, the European variety being about 2 ft. 6 in. and Sitka were about 12 ft. average. The planting distance was 4 ft. by 3 ft. triangular method, and we considered the Sitka spruce were too wide, and would have made faster growth if planted 2½ ft. by 3 ft.

Of the hardwoods, the predominant species is oak, which grows very well. There is, in fact, too large an acreage now under oak, which is generally mature, and it has been decided gradually to reduce this, and plant only small acreages of hardwoods in future, the remainder of the ground to be stocked with conifers. Other hardwoods are found more as single trees, except one small plantation of young ash.

Many of the woodlands felled were those most used for sporting purposes, and it is intended to replant these as early as possible in order to recreate the sporting facilities, and it is further proposed to plant a considerable acreage of new land in the future, extending to some 400 to 500 acres. The intention is to plant as much as 50 acres annually during the next few years.

As regards management, there are small points open to criticism. We were informed that it was quite impossible to grow oak with larch as nurses, owing to the rapid growth of the latter species. In general, throughout the country the method of raising oak is to plant far too few oak, say, at 12 ft. apart, the rest being filled up with larch nurses. In our opinion a better method would be to introduce the oak in clumps of four and use larch as fillers between, thus having a reserve of oak in order to be able to make a selection when thinning with a view to retaining the best trees. We quite realise the higher financial value of larch thinnings, and suggest that the oak clumps should be not above 2 ft. apart each way, and the larch planted in almost equal number as if single oak were used, the larch being branched or felled when damaging oak growth.

In the Myarth there was one large oak wood covering 99 acres; the crop here is only about one-third to one-fourth stocked, and it is proposed gradually to clear this, regenerate and retain a portion as oak for estate purposes, replanting the rest with conifers. The system proposed is the group system of regeneration; but we would recommend that the strip system be adopted.

Some of the larch woods have been rather over-thinned, and we noted a tendency towards the formation of groups of trees, and the extension of existing gaps. Although aware of the fastidious nature of the larch on varying qualities of soil, we think a little more care is required in order to obtain even distribution of the crop and also suggest underplanting some of the larch plantations at an early date, as there is a vigorous growth of grass under the trees, and the crop will accordingly suffer in course of time.

The woodlands of the estate generally are managed primarily with a view to the production of timber, game being a secondary consideration, but at the same time, due regard is paid to the sporting side, and blocks of laurels and rhododendrons are introduced specially in order to secure a good rise.

The large park contains numerous ornamental clumps of trees, although the cultivation of rare exotics is not a strong feature.

The management of hedgerow timber has been given considerable attention. During the War a certain number of large trees have been removed, while a gale three years ago uprooted many more, and, therefore, plans have been made for the re-stocking of hedgerows. Some years ago a very large number of trees were planted in the hedgerows; these will form a good reserve of timber for future purposes, and it is owing to this fact that the woodlands proper can be used for growing a larger proportion of conifers.

On the estate there is a very well equipped sawmill, which has been used during the War for the conversion of timber for the Timber Supply Department, although previously used solely for the conversion of timber for estate purposes. Very considerable quantities of home-grown timber have been used in the erection and repair of estate buildings, and in the yard there is a good reserve of seasoned timber. The staff employed under the forester is at present about eighteen regular hands and seven contract workers.

One notable feature of the estate is that the question of keeping down the rabbits has been in the hands of the forester since 1912, with the result that in many places we observed very fine crops of naturally regenerated ash seedlings which have come into being only since the rabbits have been taken in hand. This arrangement is an excellent one for a woodland estate, and we recommend its adoption on other estates where damage done by rabbits is undoubtedly great, and where, also, the natural regeneration of hardwoods is annually destroyed.

Three new nurseries have been established since 1916 in different parts of the estate calculated to be best situated with reference to future planting operations. The ground in each case was formerly waste land growing fern, elder, and briars, which was either grubbed or ploughed up, and the ground first planted with potatoes as a cleaning crop. They are now in process of being well stocked with plants for future operations. Some two-year bedded Scots pine were looking well, but the Japanese transplants have suffered owing to dry weather. We suggest closer lines for transplants, which were from 15 to 18 in. apart. It is also evident that shelter is needed here especially from the direct rays of the sun, the aspect being southerly. The old nursery has been in existence for some long time, and is not particularly well situated for certain portions of the woods, but it is proposed to retain this and, before any further plants are installed, to crop it with potatoes and lucerne, after which it will be used again for its original purpose.

The silver medal was awarded to Major Gibson Watt, Doldowlod, Rhayader, for the Brecon portion of the Doldowlod Estate.

The area of this portion of the estate is 2,340 acres, of which some 300 acres are woodlands. The management of the woodlands is based on the production of timber, but sporting facilities are duly considered where admissible. During the War 46 acres of woods have been sold, and it is proposed to replant this and make further extension in the woodlands area.

The woods are mostly coniferous, with larch the predominant species, and there is one very good wood of Douglas fir, which has been referred to previously.

The owner has formulated distinct plans for future treatment of the woods, and, although these are not committed to paper, we were impressed with the fact that improvement is the keynote for this branch of estate management.

The majority of the woods are in the form of belts designed for shelter and to improve the amenities of the estate, and these are managed in a systematic manner. A considerable amount of hedgerow timber has been felled during the War, including a quantity of excellent ash of large size, and it is proposed to re-stock many of the hedgerows. One feature of the estate is the ornamental timber planted in clumps, which gives a very good effect from the scenic point of view. There are also some magnificent specimens of the common species of conifers.

The use of home-grown timber on the estate is noteworthy, both for the erection of new buildings and repairs. There is a useful sawmill for estate purposes, and a creosoting plant for steeping timber for fencing and other purposes.

The nursery during the War has been producing food, and is now being re-stocked with plants for future operations, the seedbeds having just recently been added, but owing to the particularly tenacious character of the soil, were not giving promising results. We suggest that it would be improved by the annual addition of humus in the form of a mixture of turf, leaf mould and lime, well rotted, and mixed several months previous to application.

The Bronze Medal was awarded to the Margam Estate, which has some 30,000 acres, of which about 1,600 acres are under woodland. Just previous to the war, an active programme of conversion of old unprofitable woods into conifer plantations and of planting new areas of land was proceeding, and it is proposed to continue this programme. Owing to the proximity of the coal pits, the principal object is to produce pitwood, for which there has been a ready demand, and it is anticipated this will continue in the future. The soil is of Pennant sandstone and is of poor agricultural value.

The woods generally on the estate consist of old hardwood crops which need attention, and ultimate conversion, but, in view of the fact that many of the woods afford shelter to farm holdings, the process of re-stocking is to proceed gradually.

On the low-lying elevations a number of woods have been established, more especially with a view to increasing the sporting value of the estate, but the best species from a point of view of timber production are being planted, the estate being one of the few we visited where a skilled forester is in charge.

The park is fairly well timbered, and in certain portions plantations of coniferous timber have been established with a view to improving the property, and also making use of otherwise unproductive land.

The estate has a well-equipped sawmill and creosoting plant, and considerable quantities of home-grown timber are used for general purposes, much attention being given to proper seasoning of the converted timber before it is used. All species of timber are cut up and the best values are evidently realised for it.

We were particularly interested in the ingenious adaptation of inexpensive plant for creosoting by hot steeping. A large horizontal steam boiler was purchased secondhand, the ends plated up over the firebox opening, and a strip 18 in. wide cut out of the full length of the top of the boiler, *i.e.*, manhole side. The boiler was set up on brick each side, and a flue left under the full length from a grate built up at one end for the fire, the exit for smoke being carried away several yards from the boiler for safety. Creosote is pumped into the boiler from an underground storage tank by one man with an ordinary liquid manure pump, which can deliver about 1,000 gallons in 45 minutes, the fire being lit when pumping commences, wood and small coal forming the fuel. Steeping is completed in half the time by the hot as compared with the cold process, and must be of better penetration also, as it is more liquid. The creosote remaining in the tank is run off by gravitation into the pumping tank, and the timber allowed to drain before being taken from the boiler. Gates can be set bodily into the tank, as the depth of creosote is about 5 ft., and the ordinary length posts can all be accommodated if laid horizontally by inclining them at one end. The full length of the boiler is about 30 ft., and altogether the arrangement is an exceedingly economical and efficient one.

NURSERIES COMPETITION.

Owing to the War, estate nurseries have for the most part either been discontinued or used for other purposes, and only one entry was received. The competition was therefore cancelled.

PITWOOD COMPETITION.

A new and very valuable feature was introduced this year by the kindness of the South Wales Coal Owners' Association, who generously offered a Special Gold Medal of the value of 20*l.* to the estate in the district covered by the show which, in the opinion of the judges, had made the best contribution of pitwood during the War, in proportion to the area of woods, locality, species, and other guiding features.

The judging for this competition presented considerable difficulty on account of the general lack of records relating to sales of pitwood by the various estates, and to the necessity for establishing suitable bases for making the award. The obvious course was to take into account not only actual contributions, but also relative contributions, and the spirit in which such contributions were made, as reflected by the date of the sales.

The competition was a very successful one, for it attracted twelve entries, and it is valuable in giving some idea as to the extent to which the estates in this part of the country contributed to the stability of the State during the time of stress. For instance, three of the estates entered contributed an aggregate of no less than 120,000 tons of pitwood, in addition to the large quantity of more mature timber which was used for other purposes after conversion.

We awarded the gold medal to the Earl of Lisburne, Crosswood Estate, Cardiganshire. The following interesting particulars relating to the contribution from this estate were established :—

Pitwood was first sold in August, 1915, and sales were continuous until within a few days of the signing of the Armistice, so that although a block of 136 acres of pitwood was offered two years before the signing of the Armistice, and sold a few months prior to this date, it does not enter into the total quantities supplied, as it had not been cut by November 11, 1918.

The total acreage of woodland on the estate is over 2,000 acres, of which 1,119 acres of pitwood were actually cut, and a further 136 acres of pitwood sold, but not cut at the time of reference. The only pitwood remaining unsold on the estate is a small wood of 25 acres of larch, consequently it may justly be claimed that this estate contributed as much as could possibly be expected of it, especially in consideration of the fact that it had been decided to sell this remaining block if it were absolutely necessary.

The total yield of pitwood was about 50,000 tons, representing at 30 cubic ft. to the ton, some 1,500,000 cubic ft. of timber.

This competition, if continued, may form a very valuable encouragement to owners, not only to realise what pitwood is growing upon the estate, as it becomes available, but the information obtained will encourage estates to keep a closer record of what actually takes place in the woods, and bring out yields obtained in different plantations, under thinnings and clear fellings. It is hoped, therefore, that other Coal Owners' Associations in districts where the show is being held may see their way to offer some similar prize for competition in their district during any selected period.

GENERAL DEDUCTIONS.

One of the most interesting features of our tour was the comparison between Japanese and European larch. The former species is generally considered to be particularly susceptible to drought, yet we have noted many instances where it is growing side by side with European larch on steep slopes with shallow soil overlying rock, facing all aspects, and in all such cases it has started best, maintained its lead, and become the predominant tree. It closes up much more rapidly than the European species, often cleans itself more readily, produces a much bigger bulk of timber, and is freer from fungoid and insect pests. Undoubtedly the saving feature in the area judged is the comparatively high rainfall, and we conclude that throughout the district, so long as there is either a good rainfall, or a good supply of free ground moisture, Japanese larch is more successful as a pitwood tree than the European.

In some instances we noted a tendency to plant complex mixtures, whilst in others such mixtures as a fast-growing species, generally more recently introduced into this country, with a slower-growing species—as, for instance, a mixture of Norway and Sitka spruce, or Japanese and European larch, or larch, Scotch pine and Douglas fir—have been planted with a view to a saving in the original cost of the plants. The spirit of economy is an absolute necessity in future operations, but we are of the opinion that such an initial saving is more than lost before maturity is reached, and a greater economy would be effected by planting the more rapidly-growing species pure at a greater distance apart than would be done with the slower growing, without any detriment to the crop, although we recognise that it is safer to have two species in case of failure of either. The practice of planting complex mixtures is to be discouraged, since such a crop is more costly to establish at the outset, more difficult to manage, less readily saleable, and less productive than a simple mixture. The soundest method is probably to mix by large groups or blocks of pure species, except in the case of light demanders on poor class soil, when it is desirable to introduce some soil covering such as beech, on condition that the latter be treated solely as an improver.

On the other hand, we saw little evidence of the preservation or planting of hardwood species with conifers for the purpose of soil protection. Judicious introduction of hardwoods with conifers has decided advantages, amongst which may be mentioned the possibility of an earlier maturity of the crop by allowing heavier thinnings, an earlier realisation by sale of thinnings of saleable size, and a probably bigger total yield of timber, while the quality of the soil is better after the crop is cleared.

In passing, some reference should be made to the question of planting distance. During late years, we have seen a general tendency to advocate a wider planting distance, especially with such quick-growers as Douglas fir, Japanese larch, Sitka spruce, and other trees, so that we hear 5 ft. or 5½ ft. freely stated as being the correct distance for such species. There is no doubting the fact that labour costs must be reduced as far as is possible at present rates, and within limits we endorse this view of wider spacing, but would sound a word of warning lest it be carried to extreme, and lest it be forgotten that poor soils and aspects require a much larger number of trees per acre than better conditions. Many factors come into consideration, and it has yet to be established what is the widest distance advisable consonant with economy of working, establishment of proper soil conditions as early as possible, and the retention of those conditions, and the production of the biggest volume of suitable timber as saleable thinnings and as final crop. In other words, whilst it is admitted that it is all to the good to save as many plants as possible at the outset, thereby reducing the cost of establishment, and also to delay the first thinning, if possible, until only saleable material is obtained in the process, yet such potent factors as soil covering—with its influence upon yield—and quality of the resulting timber must be seriously considered. The happy medium will be arrived at only after exhaustive experiments with all the more valuable species under all conditions of soil and locality in all parts of the country. Such experiments have been commenced on a small scale, but need to be very considerably augmented without delay.

As a case in point, we may instance the larch plantation in the Elan Valley. As stated, this plantation is growing upon very steep slopes in very shallow soil, and even on the rocks themselves in places. The trees were planted 4 ft. apart, and, although fourteen years old, the Japanese have only just succeeded in covering the ground, whilst the European and the Scots pine have yet to reach that stage. In no place yet is the crop sufficiently far advanced to receive a first thinning. Consequently, we conclude that under such circumstances it is not justifiable to plant even Japanese larch at a greater distance than 4 ft. apart. On the other hand, however, there are Japanese larch plantations under better conditions which have grown so rapidly that a first thinning is possible at a younger age than this, although planted wider apart. There is one fairly self-evident point in planting up land on a steep aspect, namely, that as the light will be able to penetrate through foliage for a longer period after planting, owing to the fact that each tree is set on a higher plane than its neighbour, vegetation is thus able to persist. This points to close planting being necessary for steep aspects and wider spacing for flat areas.

Finally, we would comment upon the economic side of the question of afforestation. Owing to the increase in prices of labour and materials, the cost of planting must now greatly exceed that of pre-war times, and it is more than ever essential to work economically to form and to preserve plantations, and bring their treatment into line with a view to producing the largest possible quantity of suitable timber, whether it be pit-props or mature timber. This objective is absolutely impossible unless we have ground game brought under the ban of the law, as we cannot get even medium results from afforestation with the present costs of endeavouring to protect our woods from these vermin. More stringent action is needed against rabbits, and we suggest that they be exterminated so far as the woods are concerned, as it is not sufficient merely to keep them down. It should be remembered that the damage done by this pest is not in the amount that is eaten, but more on account of the nibbling that a rabbit finds it necessary to do in order to keep its teeth at the proper length. The experience of all foresters is that a hare or rabbit wilfully wastes young growth. If rabbits are needed on an estate, they should be confined to a warren.

The definite object of this competition is to encourage good forestry. We are at the parting of the ways, and our declared object is not only to make good the wastage of our timber resources by the War, but also to increase our reserves, and that object will be achieved not so much by the mere planting of large acreages of land, but by following up the process of planting with all possible care in treatment, remembering that it is more economical—and consequently more to our final advantage—to grow one acre of a prime crop of timber than two acres of an indifferent crop. We would also like to emphasize strongly the need for leaving suitable roads through the plantations, graded to best levels possible, as in the extraction of thinnings the existence of a track clear of stumps is a great advantage. The practice of planting all up and making tracks over newly felled stumps when thinnings are to be extracted is a reflection on the foresight of the management.

We take this opportunity of thanking Mr. Charles Coltman-Rogers and Mr. M. C. Duchesne, who were responsible for the excellent arrangements for the tour, and also the gentlemen who kindly entertained us and provided cars for the purpose of visiting the exhibits. Our thanks are also due to Col. C. Venables Llewelyn, for his interest and assistance in raising the fund by which the Competition was enabled to be held.

W. H. BENNETT.
A. P. LONG.

REPORT OF THE COUNCIL TO THE ANNUAL GENERAL MEETING OF GOVERNORS AND MEMBERS OF THE SOCIETY,

HELD AT THE
ROYAL AGRICULTURAL HALL, ISLINGTON, LONDON, N.,
On WEDNESDAY, December 10, 1919, *at* 2.30 *p.m.*

Membership.

1. The Council have to report that the list of Governors and Members has undergone the following changes during the year which has elapsed since the Annual General Meeting on December 11th, 1918; 35 new Governors (including 6 transferred from the list of Members under By-law 7), and 733 new Members have joined the Society, and 2 Members have been re-instated under By-law 14; whilst the deaths of 1 Life Governor, 9 Governors. 2 Honorary Members, 78 Life Members, and 192 Members have been reported. A total of 21 Members have been struck off the books under By-law 12, owing to absence of addresses; 90 Members under By-law 13, for arrears of subscription; 1 Member under By-law 16; and 1 Governor and 93 Annual Members have resigned.

Deaths of Governors and Members.

2. Amongst the Governors and Members whose loss the Society has to deplore are H.H. Princess Alexis Dolgorouki, Earl Brassey, Earl Cowley, Viscount Portman, Lord Alington, K.C.V.O. (Governor), Lord Barnard (Governor), Lord Basing, Lord Langford, K.C.V.O., Lord St. Oswald, Lord Peckover, Lord Poltimore, Lord Ravensworth, Lord Sherborne, Sir Geo. J. Armytage, Bart., Sir J. J. Briscoe, Bart., Sir L. E. Darell, Bart., Sir James H. Domville, Bart., R.N. (Governor), Sir R. U. Penrose Fitzgerald, Bart., Sir Walpole Greenwell, Bart., Sir Thomas B. Lennard, Bart., Sir Philip F. Rose, Bart., Sir Walter Smythe, Bart., Col. Sir Mark Sykes, Bart., M.P., Sir William Vernon, Bart., Lt.-Gen. Sir J. G. Hills-Johnes, V.C., G.C.B., the Hon. Sir Richard McBride, K.C.M.G., K.C., Sir J. F. L. Rolleston, M.P., Sir Dudley Stewart-Smith, K.C., Mr. Wm. Smith Bailey, Mr. Daniel Belcher, Mr. C. H. Berners, Mr. Francis A. Bevan (Governor), Mr. Richard Britten, Mr. George Burton, Mon. Jules M. A. Cartuyvels, of Brussels (Honorary Member), Mr. St. John Charlton (1859), Mr. W. Coryton, Mr. Joseph Cutlack (1874), Mr. T. A. M. Dickin (1873), Mr. William Drewitt (1876), Lieut.-Col. H. J. H. Edwards, Mr. A. W. English, Mr. E. S. Fordham, Mr. R. H. Fowler (Leeds), Mr. Arthur Grandage, Mr. Sidney J. Hawley, Mr. Walter Hazell, Mr. William Hollins, Mr. Thomas Hunter (Maybole), Miss Margaret E. Inge, Mr. Alfred H. Lloyd, Col. S. Parr Lynes, Mr. John Makeague, Mr. W. McLaren (1863), Mr. W. G. McLaughlin, Mr. W. J. Maltby, Mr. A. S. Leslie Melville, Mr. T. A. Negus (1861), Brig.-Gen. W. L. H. Paget, C.B., C.M.G., M.V.O., Mr. Herbert Pears, Mr. Thomas F. Plowman, late Secretary of the Bath and West and Southern

Counties Agricultural Society (Honorary Member), Mr. Charles Sheather, F.R.C.V.S., Mr. G. Murray Smith (Governor), Mr. Henry Smith (Cropwell Butler), Mr. G. F. Strawson, Mons. A. Tachard, Mr. Charles Thellusson, Mrs. Montague Thorold, Mr. A. Tisdall, Mr. W. A. Treweeke, Mr. Tom J. P. Tucker and Mr. James Whinnerah.

The deaths of the following Members occurred whilst on active service:—Mr. A. E. Beck, Lieut. E. M. Hopton, Capt. H. L. Kekewich and Mr. Eric B. Lees.

Number of Governors and Members on Register.

3. The above, and other changes, bring the total number of Governors and Members now on the Register to 11,230, divided as follows:—

236	Annual Governors;
112	Life Governors;
8,468	Annual Members:
2,390	Life Members;
24	Honorary Members;

11,230 Total number of Governors and Members as against a total of 10,954 on the Register at the time of the last Annual Report.

Presidency.

4. The Council beg to report that H.R.H. the Prince of Wales, K.G., has graciously consented to act as President of the Society for the year 1920.

Annual Election of Council.

5. The Members of Council who retire by rotation at the forthcoming Annual Meeting are those representing the following electoral districts of Group "B," viz.: Durham, Yorkshire—West Riding, Nottingham, Leicester, Rutland, Suffolk, Buckingham, Essex, London, Shropshire, Hereford, South Wales, Devon, Wiltshire, and Surrey. Members resident in these districts have been communicated with, and the necessary steps are being taken for the election or re-election of representatives for the divisions concerned.

Resignation of Mr. R. W. Hobbs.

6. Mr. R. W. Hobbs, who has represented Oxfordshire since 1903, has expressed his desire, for reasons of health, to retire from the Council. The members in the division have been notified, and measures have been taken for the election of another representative.

Accounts.

7. In accordance with the By-laws, the balance-sheet has to be presented for consideration at the Annual General Meeting. The Council therefore beg to submit the balance-sheet for the year 1918, with the Statement of Ordinary Income and Expenditure. These accounts were published in Volume 79 of the Journal issued to Members this year, having been duly examined and certified as correct by the Auditors appointed by the Members, and by the professional Accountants employed by the Society.

Cardiff Show.

8. Postponed from 1917, the seventy-eighth Annual Exhibition of the Society was held at Cardiff in June last. The site of the showground, situated conveniently near the centre of the City, was practically the same as that used in 1901, and, though of unusual length, was well suited for the purpose. For stock, the classification was of the customary comprehensive character, and, with few exceptions, all the different breeds of horses, cattle, sheep and pigs were strongly represented. The quality of the specimens shown was, on the whole, highly satisfactory. Freed from the restrictions on manufacture that handicapped the Manchester Show, the Implement Yard this year had more of the appearance of pre-war days, and on all hands there was evidence that makers had done much to take advantage of the return to peace conditions.

Considering the existing difficulties, the railway authorities dealt with the Show traffic in a creditable manner, although they were unable to offer any of the usual facilities in the way of reduced fares and excursion trains.

H.R.H. the Prince of Wales was the guest, during the week, of the Marquis of Bute at Cardiff Castle, and honoured the Show with his presence on two occasions. On the Wednesday, the Prince attended the General Meeting where the announcement that His Royal Highness had been elected a Trustee of the Society was most enthusiastically received by a large gathering of the Governors and Members.

Under the auspices of the Imperial Education Committee of the War Office, officers and men of the Oversea Forces to the number of a thousand visited the Show. These soldier agriculturists of the Dominions were officially welcomed in the showyard by the President, and their inspection of the live stock was made under the guidance of expert representatives of the various breed societies.

As on the occasion of the Society's last visit to Cardiff in 1901, the weather throughout the week was excellent. In all, 191,694 persons paid for admission, and the accounts show a balance on the credit side of £12,038 19s. 2d.

The Show will long be remembered by those present for the excellent arrangements made by the Local Committee who, with the Lord Mayor and other members of the Corporation, were indefatigable in their endeavours to ensure the success of the Visit.

Darlington Show, 1920.

9. The Yorkshire and Durham Agricultural Societies have decided not to hold separate county shows next year, but to join forces with the Royal Agricultural Society. The combined Show will be held at Darlington from Tuesday, June 29th, till Saturday, July 3rd. A sum of money is being contributed by the Yorkshire Society, the members of which will receive the same privileges as those accorded to members of the Royal Agricultural Society.

Prize List.

Offers of Champion and other prizes have been received from the following Breed Societies:—Shire Horse Society, Clydesdale

Horse Society, Suffolk Horse Society, British Percheron Horse Society, Hunters' Improvement and National Light Horse Breeding Society, National Pony Society, Arab Horse Society, Cleveland Bay Horse Society, Yorkshire Coach Horse Society, Hackney Horse Society, Dales Pony Improvement Society, Fell Pony Society, Welsh Pony and Cob Society, Shorthorn Society, Dairy Shorthorn Association, Hereford Herd Book Society, Devon Cattle Breeders' Society, South Devon Herd Book Society, Longhorn Cattle Society, Sussex Herd Book Society, Welsh Black Cattle Society, Red Poll Cattle Society, Park Cattle Society, Aberdeen Angus Cattle Society, English Aberdeen Angus Cattle Association, British Friesian Cattle Society, English Jersey Cattle Society, English Guernsey Cattle Society, Hampshire Down Sheep Breeders' Association. Ryeland Flock Book Society, Society of Border Leicester Sheep Breeders, Wensleydale Longwool Sheep Breeders' Association, Kent or Romney Marsh Sheep Breeders' Association, Cotswold Sheep Society, Cheviot Sheep Society, Herdwick Sheep Breeders' Association, Welsh Mountain Flock Book Society, English Black Face Sheep Society, Large Black Pig Society, Cumberland Pig Breeders' Association, Wessex Saddleback Pig Society.

The following Challenge Cups are again also offered:—

Fifty Pound Silver Cup for the best Suffolk Stallion.

Fifty Guinea Gold Cup for the best Riding Hunter.

Fifty Guinea Gold Cup for the best Hack or Riding Pony.

Fifty Guinea Gold Cup for the best Single Harness Horse.

Fifty Guinea Gold Cup for the best Double Harness Horses.

Fifty Guinea Gold Cup for the best Tandem.

Fifty Guinea Gold Cup for the best Four-in-Hand Team.

Fifty Guinea Silver Cup for the best group of Dairy Shorthorns.

Fifty Guinea Silver Cup for the best five animals in the Dairy Shorthorn Classes (two of which may be Bulls) by the same sire.

Twenty Pound Silver Cup for the best animal in the South Devon Classes.

Fifteen Pound Silver Cup for the best Longhorn Bull or Cow.

Fifteen Pound Silver Cup for the best Longhorn Yearling Bull or Heifer.

Twenty-five Guinea Silver Cup for the best Kerry animal.

Twenty-five Guinea Silver Cup for the best Dexter animal.

Sixty Guinea Silver Cup for the best Border Leicester Ram or Ewe.

Twenty-five Guinea Silver Cup for the best Large White Pig.

Twenty-five Guinea Silver Cup for the best Middle White Pig.

Twenty-five Guinea Silver Cup for the best Tamworth Pig.

Twenty Guinea Silver Cup for the most points awarded in a combination of entries in the Berkshire Pig Classes.

Twenty Guinea Silver Cup for the best Large Black Sow.

Forty Guinea Silver Cup for the best Gloucestershire Old Spot.

Ten Guinea Silver Cup for the best Gloucestershire Old Spot Boar.

Ten Guinea Silver Cup for the best Gloucestershire Old Spot Sow.

Five Pound Challenge Cup for the best Exhibit of Cider.

In the Poultry section Special and other Prizes are being contributed by the following Clubs:—Dorking Club, Black Wyandotte Club, British Rhode Island Red Club, Blue Leghorn Club, Barred Plymouth Rock Club, Buff Plymouth Rock Club, Scots Dumpy Club, Belgian Bearded Bantam Club.

In the Rabbit section Special and other Prizes are being contributed by the following Clubs:—National Belgian Hare Club, National Flemish Giant Club, National English Club, United Kingdom Dutch Club, Beveren Club, National Silver Club, Tan Club and National Polish Club.

In the Produce section Classes and Prizes will be provided for Butter, Cheeses made in 1920, Cider and Perry.

Each Breed Society which has expressed a desire for it will again have a separate classification for the wool of its particular breed. Classes will also be provided for wool of cross-bred sheep.

Shows of 1921 and 1924.

10. Invitations have been accepted by the Council to hold the Show at Derby in the year 1921, and at Leicester in 1924.

Trials of Tractors and Ploughs.

11. Trials of Agricultural Tractors and Ploughs, originally announced to take place in the year 1915, will be held in the Midland Counties during the first week of October next year. The classes and prizes are as below:—

Class 1.—First Prize, Gold Medal and £20. Second Prize, Bronze Medal and £10. Internal Combustion Direct Traction Engine not exceeding 30 B.H.P., suitable for Ploughing 2 or 3 furrows, 10 inches by 6 inches deep.

Class 2.—First Prize, Gold Medal and £20. Second Prize, Bronze Medal and £10. Internal Combustion Direct Traction Engine over 30 B.H.P, suitable for Ploughing 4 furrows, 10 inches wide by 8 inches deep.

Class 3.—First Prize, Gold Medal and £20. Second Prize, Bronze Medal and £10. Direct Traction Steam Engine Plant, suitable for Ploughing 4 furrows, 10 inches wide by 8 inches deep. Engines to comply with the requirements of the Light Road Locomotive Acts.

Class 4.—First Prize, Gold Medal and £20. Second Prize. Bronze Medal and £10. Internal Combustion Double Engine set, with wire rope haulage, for Ploughing 3 or 4 furrows, 10 inches wide by 8 inches deep. Engines to comply with the requirements of the Light Road Locomotive Acts.

Class 5.—First Prize, Gold Medal and £20. Second Prize, Bronze Medal and £10. Double Steam Engine Set, with wire rope haulage, for Ploughing 3 or 4 furrows, 10 inches wide by 8 inches deep. Engines to comply with the requirements of the Light Road Locomotive Acts.

Class 6.—First Prize, Gold Medal and £20. Second Prize, Bronze Medal and £10. Self-propelled Plough for ploughing not more than 4 furrows, and not more than 10 inches wide by not more than 8 inches deep.

The latest date for receiving Entries is March 20th.

Judges at Argentine and Uruguayan Shows.

12. The undermentioned gentlemen were appointed, at the request of the Argentine Rural Society, to act as Judges at the Palermo Show in September:—

Shorthorns.

W. ANDERSON, Saphock, Old Meldrum.
ROBERT HORNSBY, Hovingham, Malton, Yorkshire
JAMES PETER, Berkeley, Glos.

Herefords.

E. CRAIG TANNER, Eyton-on-Severn, Shrewsbury.

Aberdeen Angus.

JOHN PHILIP, Dandaleith, Craigellachie.

Lincoln Sheep and Pigs.

CHARLES CLARKE, Holmleigh, Dorrington, Lincoln.

Messrs. Hornsby, Craig Tanner and Clarke also officiated as Judges at the Monte Video Show, in response to an application made to the Society by the Uruguayan Rural Association. The following is a translation of a letter received from the President of the Association:—

ASSOCION RURAL DEL URUGUAY,
Montevideo, 12th September, 1919.

Dear Mr. President,

I am pleased to inform you that we have had great pleasure in receiving as guests, on the occasion of our recent Championship Show, Messrs. Robert Hornsby, Edward Tanner and Charles Clarke, appointed by the Society over which you so worthily preside, to act as Judges of Shorthorns and Herefords and Sheep and Pigs respectively.

These gentlemen carried out their mission in a highly creditable manner, and your Society is to be congratulated on their selection for the delicate tasks they have accomplished so well.

Their verdicts, which have been applauded by every Uruguayan breeder, evidenced the profound knowledge and long experience of the distinguished experts, their judging being equivalent to a highly significant lesson.

In thanking your Society for the valued assistance it has given us on the occasion of our last Live Stock Show, I beg that our felicitations may be again conveyed to the gentlemen who acted as Judges, upon their return home from these South American regions where they will always be remembered with pleasure.

Yours, etc.,

The President,
Royal Agricultural Society of England, London.

Library.

13. Reference was made in the last Annual Report to the preparation of a catalogue of the Society's Library. This catalogue has now been printed, and may be obtained by members at 17s. 6d. per copy. Copies may also be obtained by non-members at 21s. A librarian has been appointed, and the Council have drawn up the following regulations:—

1. The library is open every week day from 10 till 4, except on Saturdays and on those days when the Council and Committees are meeting.

2. Governors and members are entitled to take out books, upon paying the carriage of the same and all expenses from the time of issue to the time of return. Books of reference and selected books will not be issued.

3. One month is allowed for the perusal of books.

4. Governors and members shall be liable to pay the full price of any books borrowed by them which may be lost or damaged during the interval between their issue and return.

Chemical Department.

14. The slight improvement reported a year ago in regard to the number of samples sent by members to the Society's Laboratory has been maintained, these increasing from 341 in 1918 to 381 in 1919, and this notwithstanding the continuance of great difficulties in the supply of fertilisers and feeding stuffs alike, and the greatly increased prices of the same. As in 1918, a considerable number of soils were sent for analysis, and advice sought on their treatment.

An occasional sample of Potash salts from the newly-opened deposits in Alsace has been sent, and suggestions have been made for the utilisation of waste materials for feeding purposes; otherwise the year's experience has brought out but few new points.

The control of prices of fertilisers and feeding stuffs by the Government was removed in the course of the year, but, in the case of most of the common feeding materials, maximum prices have been agreed upon between the Ministry of Food and the makers. A general agreement has also been come to between Government Departments concerned and the sellers as to the prices for sulphate of ammonia, potash salts, etc. Speaking generally, these are all much in excess of what ruled during the war, and feeding cakes in particular have ruled very high, linseed cake, *e.g.*, going up to £26 or more per ton.

Occasional Notes.

15. Judging from the correspondence received, good service has been rendered by the Chemical Committee in the issue of "Occasional Notes" Nos. 6 and 7, which were circulated to members during the year. In the issue of their Notes the Chemical Committee, with the approval of the Council, have adopted the bold policy of giving, when obtainable, and where warranted by the circumstances, the names and addresses of those who have supplied adulterated or inferior materials. This step has been generally approved by members, many of whom have written expressing their opinion of the value of these Notes. The Notes of 1919 contain, in addition to records of adulteration, etc., important decisions given under the Fertilisers and Feeding Stuffs Act, and general warnings and advice to members. The frequently inferior quality of articles sold as "Pig Meal," and the low quality of lime as often sold, are specially commented on.

Woburn.

16. The official visit of the Council to the Woburn Experimental Farm took place on July 30th. The continuous corn crops (forty-third successive year) were found to be, if anything, better than

usual, and the whole farm has, during a year of much difficulty, been kept well up to the mark. The corn crops were better than in the neighbourhood generally, and green crops, swedes and potatoes likewise. The hay crop, as everywhere, was small, and mangels failed entirely, owing to the drought. Great difficulties had been experienced in keeping stock "going" on the grass land, with feeding stuffs at ruinous prices. But great assistance had been given in the cultivation of the land through the purchase, early in the year, of a Fordson tractor which, on the light land of Woburn, has done excellent work.

The differences in the plots of the continuous wheat and barley experiments, due to manurial treatment, were perhaps never so clearly marked as this year. The work of the pot-culture station has been actively carried on, and experiments based on former results obtained there, on liming, are now being transferred to Stackyard Field, and are being conducted there on the field scale. These concern chiefly the relative efficiency of Lime (burnt) and Chalk, for liming land.

At the Pot-culture Station itself, similar work is proceeding. The Hills' experiments have, in 1919, been upon the influence of compounds of arsenic, while other and fresh work has been done in connection with the application of sulphate of ammonia to corn crops at different periods of the year, and to the utilisation of waste leather.

In consequence of the difficulties attending the feeding of stock, and chiefly the impossibility of procuring milk, the proposed new calf-rearing experiments had to be postponed, but will be taken up at the earliest opportunity.

In connection with the scheme for extending the usefulness of the Woburn experiments, whereby some of these will be repeated in other districts, eight members of the Society have adopted one or other of the suggested experiments, and these will, in due course, be reported upon.

Botanical Department.

17. The work of the Botanical Department has been very similar to that of the preceding year. There has been a further diminution in the number of samples of seeds tested for purity and germination capacity. The fungoid diseases of crops have again been the subject of more enquiries than usual. On the whole, these diseases have been of little general interest. But the black rust of wheat is an exception, for this has been far more prevalent during the past season than it has been for many years. The efforts of the Board of Agriculture to limit the spread of the wart disease of potatoes has led to many enquiries on the subject. So far, only one of the specimens sent in for examination has been attacked by this disease, but unfortunately the outbreak has occurred in a district hitherto free from it. More attention has also been paid to the cereal crops and information on varieties, on intensive methods of cultivation and on seed treatment has been in considerable demand.

Zoological Department.

18. The year has been a bad one for insect attacks, and the Zoological Department has dealt with a wide variety of pests.

The compulsory late sowing of corn crops on account of the prolonged winter, and the drought of the early summer were conditions which favoured many pests, from which the crops were unable to grow away. Especially conspicuous have been the abundance of caterpillars, and the unusual amount of damage done by aphis. Almost every kind of caterpillar was complained of, including many that are in most years negligible, and, later in the season, aphis attacks occurred on all kinds of crops—corn, roots, pulse, fruit, etc. There is, however, no new pest of importance to record.

Enquiries have, as usual, included many cases of animal parasites, and numerous specimens of insects and arachnids have been sent for identification.

Research Institute in Dairying.

19. An investigation of the relative value of fresh and stored whey as a feeding stuff for pigs has been undertaken by the staff of the Research Institute in Dairying, University College, Reading. This was suggested by the Consulting Chemist, to whom a member of the Society had expressed the opinion that excess whey could be advantageously stored and used as a feeding stuff throughout the winter.

A number of enquiries by members on various subjects has been dealt with at the Research Institute during the year.

With a view to comparing the fat and protein content of milk of different breeds of cows, a series of tests was carried out by the staff of the Institute at the Cardiff Show, an account of which appears in the Report of the Steward of Dairying.

Animal Diseases.

20. With regard to the occurrence of the scheduled contagious diseases, the principal features of the year have been the serious spread of rabies and the introduction of foot-and-mouth disease into the country on a large number of apparently independent occasions. During the first quarter of the year cases of rabies were confined to the two counties of Devon and Cornwall, in which the disease made its appearance in 1918, but at the end of March other cases were confirmed from Glamorgan and Monmouth, and it is in these two counties that the great majority of the cases during the current year have occurred. There has been a marked decline in the number of cases during the last three months, and there appears to be good reason to hope that the measures now being enforced against the disease will soon prove to be completely successful. The first outbreak of foot-and-mouth disease during the year was detected in the West Riding of Yorkshire in January, and during the following two months 18 other outbreaks occurred in the same county. The disease next appeared in Warwickshire in the month of August, and the later series of outbreaks have occurred in the counties of Dorset, Cambridge, Huntingdon, Hants (Isle of Wight), Lincoln, and Surrey. In spite of the risk attending the return of large numbers of army horses from the Continent, there has been no increase in the number of outbreaks of glanders. Sheep scab has shown a slight decline as compared with the previous year, but there has been an increase in the number of

outbreaks of swine fever and parasitic mange. The number of outbreaks of anthrax is the smallest on record since the disease was first scheduled.

Investigations at Royal Veterinary College.

21. At the Royal Veterinary College during the year, investigations with regard to contagious abortion in cows and mares have been continued, and assistance in dealing with outbreaks has been given to members of the Society. Experiments in connection with the treatment of joint-ill in foals have also been continued. During the ensuing year it is intended to undertake an investigation into the causes and treatment of the various forms of inflammation of the udder in cows, and members of the Society who have such cases in their stock are requested to communicate with the Principal of the College.

Sheep Scab.

22. A deputation from the Council in April last waited upon the President of the Board of Agriculture to advocate more drastic action being taken with a view to the eradication of Sheep Scab. In the course of his reply to the deputation, Lord Ernle stated that, partly owing to the lack of an adequate staff of inspectors at that time, there was little hope of immediate steps being taken to stamp out the disease.

It was understood, however, that when the Board again had an adequate staff they would consider the question of a big campaign against Sheep Scab.

The Local Authorities, Lord Ernle said, had power, whenever a sheep was brought into their county, to order it to be dipped at once and again after a period of ten days. Those powers, if enforced, ought to keep a county reasonably clear from infection.

The Council have since communicated with all County Councils in Great Britain, calling their attention to the powers possessed by them under the Sheep Dipping Orders and to the absolute necessity which exists for the Authorities to carry out those Orders.

Animals Anæsthetics Bill.

23. In the interests of breeders of horses and live stock and of all agriculturists, the Council expressed their disapproval of the Animals (Anæsthetics) Bill as originally introduced. The Bill was referred to a Select Committee of the House of Lords, before which Mr. Rowell, as representing the Society, gave evidence; and, after modification, the Bill has since become law.

Medals for Cattle Pathology.

24. As the result of the competitive examination at the Royal Veterinary College for the Society's Medals for proficiency in Cattle Pathology, including the diseases of Cattle, Sheep, and Pigs, the Silver Medal has been awarded to Mr. R. Catmur, 23, Terrace Road, South Hackney, and the bronze medal to Mr. J. E. Barnes, 1, Great Ostry, Shepton Mallet.

Importation of Live Cattle.

25. The Council, at their meeting immediately preceding the Cardiff Show, had before them a letter from the Corporation

of the City of London stating that they were considering the question of the removal of the existing restrictions on the importation of Canadian Store Cattle into Great Britain, and were desirous of learning whether agricultural and other societies representing stockbreeders and farming interests had recently considered the matter under conditions following the war.

This was a matter of such importance that the Council considered it advisable to obtain the views of the different societies interested at a meeting in the showyard at Cardiff. A meeting was held, and was attended by representatives of all the principal agricultural and breed societies, under the presidency of Sir J. B. Bowen-Jones, Bart., and, after an exchange of views, a resolution was passed in the following terms:—

> "Having regard to the great importance of protecting the live stock of this country from the introduction of contagious disease, this meeting of representatives of agricultural and breed societies deprecates in the strongest manner any proposals to repeal the Diseases of Animals Act, 1896."

A suggestion was made at the meeting by a representative of the City Corporation that the various societies should meet in the Guildhall of the City of London, and hold a conference on the subject. It was, however, resolved:—

> "That this meeting being diametrically averse to the introduction of live cattle, there is no need for a conference with the City of London Corporation."

26. At a meeting of the Council on July 30th, Lord Strachie quoted the following from a Board of Agriculture Memorandum read by Lord Crawford in the House of Lords two days previously:—

> "So far as the Board of Agriculture and Fisheries is concerned, the position, therefore, is this. The Board acknowledges in the fullest measure that the ground of the prohibition on which Canadian stores, born and reared in Canada, and leaving it for the first time, are now excluded is not justified, and that they are, and for many years have been, exceptionally free from disease. But the Board is equally strong in the opinion that no relaxation of the prohibition itself is possible in the interests of live stock at home. It follows that, if the present ground of the prohibition is removed as a matter of justice to Canada, the prohibition itself must remain as part of the domestic policy of the United Kingdom. I may add that the general importation of Canadian store cattle into this country is impossible without further legislation."

Prohibition, Lord Strachie pointed out, had hitherto always been on the grounds of protecting the herds and flocks of this country from disease; and, until the statement above quoted, the Board of Agriculture had never put forward the plea of protecting home breeders from competition.

After discussion, the subjoined resolution was passed:—

> "That the Council draw attention to the apparent change of attitude of the Board of Agriculture inasmuch as they no longer only base the exclusion of Store Cattle from Canada on the grounds of the danger of the introduction of disease."

27. On the recommendation of the Veterinary Committee, the Council, at their November meeting, further resolved:

> "That, in view of the alarming outbreaks of foot and mouth disease, any relaxation of the law prohibiting the importation of store cattle from abroad is to be strongly deprecated, and the Council desire again to emphasise their support of the resolution passed by the representatives of agricultural and breed societies in the Cardiff show-yard." (See par. 25.)

The President of the Board of Agriculture stated in the House of Lords on November 12th that "In view of the changed conditions since 1917, the Government did not propose to introduce legislation to alter the existing law. The matter had become one of domestic concern, in which the Government must safeguard British interests to the exclusion of all other considerations."

28. In view of the danger of the infection of the Dairy Herds of this country, the Council have expressed their opinion that it would be undesirable to import dairy cattle from the Continent as was done by the Board of Agriculture in 1914.

"Queen Victoria Gifts."

29. The Trustees of the "Queen Victoria Gifts" Fund have made a grant of £140 for the year 1919 to the Royal Agricultural Benevolent Institution, to be distributed as two gifts of £10 each in respect of male candidates, four gifts of £10 each in respect of married couples, and eight gifts of £10 each in respect of female candidates.

National Diploma in Agriculture.

30. The Twentieth Annual Examination for the National Diploma in Agriculture was held at the Leeds University from the 26th to 30th April last, when 13 candidates were successful in obtaining the Diploma, one with Honours. For list see page 380.

National Diploma in Dairying.

31. The Twenty-fourth Examination for the National Diploma in Dairying was held this year for English students from September 13th to 19th, at the University College and British Dairy Institute, Reading; and for the Scottish students from September 19th to 26th, at the Dairy School for Scotland at Kilmarnock. Thirty-two candidates were examined at the English Centre, of whom twenty-one were successful, and at the Scottish Centre twenty-eight candidates were examined, of whom twenty-two passed. The names of the Diploma winners will be found on page 383.

War Emergency Committee.

32. The War Emergency Committee has continued to watch carefully matters affecting agriculture as a whole arising out of the abnormal national situation of the moment, and from time to time has made recommendations to the Council. It has again had the advantage of extremely able representation on the Central Advisory Council and other bodies, and the views of the Committee have thus been brought to the proper quarters in a way which has been most effective. The Society is indebted in particular to its representatives on the Central Advisory Council—the Earl of Northbrook, the Hon. Cecil T. Parker, Messrs. John Evens, Alfred Mansell, and Henry Overman.

Milk.

33. Vague proposals have from time to time been put forward in various quarters for the control of milk supplies. The Committee has twice strongly condemned any further permanent control of milk, believing that such control would discourage production, and the definite announcement was afterwards made by the Food Controller that the Government had decided not to institute any permanent measure of milk control involving the taking over of the wholesale milk trade.

Meat.

34. Through its representatives on the Central Advisory Council the Committee has succeeded in obtaining more adequate regard for the position of the producer of meat during the consideration of prices proposed for the Winter of 1919-1920. Though the full measure of the demands of feeders may not have been conceded by the Ministry of Food, a compromise of a satisfactory nature was found.

Wages.

35. Mr. John Evens has been re-appointed one of the Society's representatives on the Agricultural Wages Board, and Mr. Alfred Mansell has succeeded Mr. Hobbs as the other representative.

Careful attention has been given to a report by the Agricultural Wages Board as to the financial results of the occupation of land, and the Committee expressed the view that it was unfortunate that the report should have been put before the public in its published form, having regard to the meagre data upon which it was based, the absence of classification of the farms reported on according to district and management, the lack of any allowance in the accounts in respect of interest on capital, and the inflation of the balances by the exhaustion of the capital in the land through the removal of labour during the war and the curtailed expenditure in feeding stuffs, manures and machinery.

Guaranteed Prices.

36. Believing that the only way to secure a guaranteed wage was by a guaranteed price, the Committee have expressed the opinion that the present production of home grown corn will not be maintained unless growers are assured of obtaining a remunerative price for a period of not less than five years.

Live Stock.

37. Representations have been made to the authorities with regard to the difficulties and delays experienced by exporters of live stock owing to Government formalities, and an official intimation was thereupon given that no undue delay should now arise in obtaining licences in respect of pedigree animals.

Hay.

38. Having regard to the shortage of the 1919 hay crop, the Committee urged the Government that if control became necessary it should not extend to commandeering or distribution, and

the President of the Board of Agriculture subsequently informed the Committee that the Government did not propose to commandeer hay.

Potatoes.

39. The Committee having drawn attention to the financial loss and inconvenience experienced by growers of the 1918 potato crop from the wastage and non-removal of their crop, official assurances were forthcoming that the Government did not repudiate their obligations and were ready to meet all just claims.

Pig Feeding.

40. The need for encouraging pig rearing has been again brought to the notice of the Government in a resolution asking for steps to be taken to ensure a supply of maize at reasonable prices. The Committee have now been informed that efforts are being made to secure an increased importation of this cereal.

Other Matters.

41. The Committee have joined with other bodies in pointing out to the Government the difficulties arising early in the year from the withdrawal of soldier labour. They have also called the attention of the War Office to the grave danger attending the repatriation of Army horses from France owing to the presence of infectious disease and urged that special care be taken to safeguard the interests of horse owners and live stock breeders.

The desirability of the immediate release for cultivation of land no longer required by the Naval and Military authorities has also been emphasised. The Committee have presented legal opinion before the Board of Agriculture relative to the Board's attitude towards a claim for compensation for loss of crop under the compulsory ploughing of grass land, and, in consequence of the Committee's representations, the Board reconsidered the matter.

Agricultural Relief of Allies Committee.

42. Upon the cessation of hostilities the work of the Agricultural Relief of Allies Committee (initiated by the Society in 1915) at once assumed considerable importance. As the result of enquiries which were made as to the form in which assistance could best be offered to the peasant farmers in the devastated regions of France, Belgium and Serbia, it was felt that the Committee could most usefully help in the restoration of agriculture by gifts of British live stock. Although a sum approaching £200,000 had been subscribed, the needs of the devastated districts were so enormous that tangible benefits could only be obtained by the concentration of the Committee's help in relatively restricted areas. Accordingly, it was decided that in France the special task of the Committee should be to assist the farmers of the Somme, and in Belgium those of the Yser Valley, districts with which British troops had been specially associated. In Serbia it was decided to concentrate in the neighbourhood of Shabatz, where the agricultural devastation was most severe.

The first shipment of live stock to Belgium was made exactly four months after the armistice, on March 11th. It consisted of 299 head of dairy shorthorn cattle, comprising 20 pedigree bulls and 279 non-pedigree heifers. Shipments continued at regular intervals and, up to date, the Committee have sent the following:—

	Male.	Female.
Cattle	53	727
Sheep	55	1,145
Pigs	57	597
Goats	361	
Poultry	1,000	
Eggs	6,692	

In June the Committee sent their first gift of cattle to France, and within two months they had shipped about 700 head of bulls and heifers. In August they began their shipments of sheep and pigs. Consignments continued at regular intervals during the summer and autumn, and, up to date, the following stock has been distributed in that country:—

	Male.	Female.
Cattle	55	782
Sheep	224	1,560
Pigs	45	461
Poultry	8,062	

Implements, etc.	20 Binders
	6 Threshing Machines
	50 Ploughs
	20 Cultivators
	15 Drills
	40 Harrows
	5 Tons Binder Twine
Seed	800 sacks seed wheat
	2,036 ,, ,, oats
	20 ,, ,, barley
	892 ,, ,, potatoes
	930 lbs. Scots pine seed.
Trees	9,000 Fruit Trees

The bulk of the stock has been distributed, in accordance with the Committee's decision, in the Department of the Somme, but a considerable number of Southdown and Suffolk Sheep (included in the above figures) have been given to farmers in the Marne and the Meuse, regions more suited to the habits of those breeds.

The Committee encountered great difficulties in their efforts to obtain shipping for their gift to Serbia, but in October a consignment of nearly 600 head of cattle and 2,000 head of live poultry left Cardiff in the "Theseus." The consignment was successfully landed at Buccari and distributed, without loss, to the peasants in the Shabatz region

A consignment of Live Poultry has also been dispatched to Poland.

Not only the recipients but the Government representatives in each of the three Allied countries have expressed profound gratitude for help so practical and so opportune. The Society have the satisfaction of knowing that through the work of the Committee much has been done to enable the small farmers to make a fresh start on the holdings to which they are so greatly attached, and thus to hasten, in some measure, the reconstitution of the agriculture of our Allies.

It should be mentioned that the members of the Society responded so liberally to a special appeal made by the President (Sir J. B. Bowen-Jones) that about £1,200 was subscribed within a few weeks.

The Committee are now engaged upon the completion of their task.

By order of the Council,

THOMAS McROW,
Secretary.

16, BEDFORD SQUARE,
LONDON, W.C. 1.
November, 1919.

NATIONAL AGRICULTURAL EXAMINATION BOARD.

I.—REPORT ON THE RESULTS OF THE TWENTIETH EXAMINATION FOR THE NATIONAL DIPLOMA IN AGRICULTURE,

HELD AT LEEDS, APRIL 26 TO 30, 1919.

1. The Twentieth Examination for the NATIONAL DIPLOMA IN AGRICULTURE was, by the courtesy of the authorities, held at the University of Leeds, from the 26th to the 30th April last.

2. The subjects of Examination were Practical Agriculture (two papers), Farm and Estate Engineering (including (a) Surveying and Farm Buildings, (b) Machinery and Implements), Agricultural Chemistry, Agricultural Botany, Agricultural Book-keeping, Agricultural Zoology, and Veterinary Science. Under the Regulations, the whole eight papers may be taken at one time, or a group of any three or four in one year and the remaining group of four or five in the year following. Candidates taking the whole Examination in one year who fail in not more than two subjects are allowed to take those subjects alone in the succeeding year. Candidates failing in a single subject of a group are permitted to take that subject again in conjunction with the second group.

3. Thirty-three candidates presented themselves, as compared with 17 last year. Two candidates took the whole Examination, 16 who had previously passed in certain subjects appeared for the remaining portion, and the other 15 candidates came up for a first group of subjects.

4. As the result of the Examination 13 candidates were successful in obtaining the Diploma, one *with Honours*. In the list which follows the names of the ordinary Diploma-winners are given in alphabetical order :—

Diploma, with Honours.

DORIS ANDERSON, University College, Reading.

Diploma.

ERIC CHARLES BANFIELD, Harper-Adams Agricultural College, Newport, Salop.

REGINALD GEORGE BURN, University of Leeds.

ALEXANDER MARSHALL HENDERSON, West of Scotland Agricultural College, Glasgow.

John Henderson, West of Scotland Agricultural College, Glasgow.
Kenneth Stephens Maclean, Harper-Adams Agricultural College, Newport, Salop.
Herbert William Miles, Harper-Adams Agricultural College, Newport, Salop.
Thomas William Porter, Agricultural College, Uckfield.
Thomas J. Shaw, Harper-Adams Agricultural College, Newport, Salop.
Leslie Herbert Stedeford, University of Leeds.
Arthur John Wakefield, Harper-Adams Agricultural College, Newport, Salop.
George D. Wyllie, West of Scotland Agricultural College, Glasgow.
William Calderwood Young, West of Scotland Agricultural College, Glasgow.

5. Of the 15 candidates appearing for a first group of subjects, the 6 whose names are given below succeeded in passing, and are therefore entitled to take the remaining subjects at a subsequent examination, when, if successful, they will be awarded the diploma :—

Frederick Thomas Bennett, 17, Undercliffe Road, Stoneycroft, Liverpool.
Norah R. Coleman, University College, Reading.
William Fairbairn Hesling, Harper-Adams Agricultural College, Newport, Salop.
Thomas Goodall Mountford, Harper-Adams Agricultural College, Newport, Salop.
James L. Tindal, Junr., West of Scotland Agricultural College, Glasgow.
Mary Scott Westbrook, University College, Reading.

Three candidates failed in a single subject of a group, and will be permitted to take that particular subject again next year in conjunction with the second group.

6. The Reports of the Examiners in the different subjects are appended :—

Practical Agriculture. (First Paper, 300 Marks. Second Paper, 300 Marks.) Professor W. McCracken, Wm. Burkitt, B.Sc., and John Gilchrist, F.S.I.

We consider the candidates generally weaker than usual, especially in their knowledge of manures and feeding stuffs, two of the most important questions agriculturists have to deal with. The Honours candidate stood well out above the rest. Some of the candidates were on the youthful side, and it is impossible to expect a very thorough knowledge of practical agriculture at the age of 18, especially if the candidate was not brought up on a farm. A number of the candidates had had their training interrupted by the War, and, having been only recently demobilized, were at a corresponding disadvantage. This is, however, a difficulty not likely to recur in the same degree.

Farm and Estate Engineering. (a) Surveying and Farm Buildings (150 Marks), Robert Cobb. (b) Machinery and Implements (150 Marks). Prof. R. Stanfield, M.Inst.C.E.

Surveying and Farm Buildings :—"Book" knowledge was good, but again the practical application was weak: many of the candidates could not compute areas, the reading of the level staff needed much consideration, and it is doubtful if a theodolite had ever been handled by the majority of candidates. Considering its difficulty in present times the *Farm Building* section was, on the whole, well handled, and the Examiner is glad to note that the elementary drainage questions were generally tackled soundly. As a whole the standard was an improvement on last year.

Machinery and Implements :—Most of the thirteen candidates who were examined answered the questions in a satisfactory manner: one in particular—a lady—did an excellent paper. Since the candidates have a choice of questions, there is a general tendency to select those of a descriptive character, and to avoid any in which calculations occur. No exception can be taken to this procedure, provided the candidate has had actual practical experience of the implement or machine in question, but frequently this is not the case, and it is obvious that the knowledge has been acquired from a text-book or other literature. It is most desirable that the candidates, before presenting themselves for examination, should have had actual working experience with agricultural machinery, and teachers of this subject should have their attention called to this omission. Fortunately most of the candidates had had actual experience in the working of agricultural motors, and in this respect their knowledge was quite satisfactory.

AGRICULTURAL CHEMISTRY. (300 Marks.) Dr. Bernard Dyer, D.Sc., F.C.S., F.I.C., and Dr. J. Augustus Voelcker, M.A., B.Sc., Ph.D.

Considering the special difficulties with which the majority of the candidates had had to contend—and for which appropriate allowance was made—the results of this part of the Examination may be taken, on the whole, as satisfactory. The answers given, especially in the *vivâ voce* part, indicated "rustiness" in the subject rather than actual want of knowledge. The individual questions given hardly call for special comment, as, with one exception (Question 8, which was only attempted by two candidates), the above general remark applies to all alike.

AGRICULTURAL BOTANY. (300 Marks.) Professor John Percival, M.A.

Almost all the candidates showed evidence of a good general training in this subject, and their work in the Examination was on the whole satisfactory. More attention should be given to practical botanical work and the less common farm plants should not be neglected. Some of the candidates did not recognise ears of rye, seeds of buckwheat and flax.

AGRICULTURAL BOOK-KEEPING. (200 Marks.) L. F. Foster, F.C.I.S., F.L.A.A.

Seventeen candidates were examined in this subject, of whom nine failed to arrive at the standard required in the Examination. Several candidates were just below the standard required for a pass. In some cases the fundamental principles of the subject were imperfectly understood; and in others the treatment of special items was at fault. There is need for impressing upon students the fact that the various items should be adequately classified. Only in one case had a Trial Balance been attempted. While it is not absolutely essential that this be done, the satisfaction to the student that a proof has been established of the transactions having been correctly recorded cannot fail to be of some considerable assistance to him in compiling the final accounts. The subject of Agricultural Book-keeping being of considerable importance at the present time, it behoves the institutions preparing candidates for the Examination to present them with a knowledge at least up to the standard required by the official syllabus.

AGRICULTURAL ZOOLOGY. (200 Marks.) Cecil Warburton, M.A.

Most of the eighteen candidates showed a very fair knowledge of the subject, and the work on the whole was satisfactory.

VETERINARY SCIENCE. (200 Marks.) Professor Sir John McFadyean, M.B.

With few exceptions, the candidates displayed in both the written and the *vivâ voce* parts of the examination, a quite satisfactory knowledge of the subject.

7. The thanks of the Board are again due to the authorities of the University of Leeds, for their liberality and courtesy in placing the Large Hall and other rooms of the University at the Board's disposal for the Examination; and to the Examiners, for the care and attention they bestowed upon the written answers to the papers set, and upon the *vivâ voce* examination.

CHARLES DOUGLAS, *Chairman.*
THOMAS MCROW, *Secretary.*

16 Bedford Square, London, W.C.1.
May, 1919.

II.—REPORT ON THE RESULTS OF THE TWENTY-FOURTH EXAMINATION FOR THE NATIONAL DIPLOMA IN DAIRYING, 1919.

1. The Twenty-fourth Annual Examination for the National Diploma in the Science and Practice of Dairying took place in September, 1919. The Examination was held for English candidates at the University College and British Dairy Institute, Reading, from September 13 to 19; and for Scottish candidates at the Dairy School for Scotland, Kilmarnock, from September 19 to 26.

2. Thirty-two candidates presented themselves at the English Centre. Of these, the following twenty-one satisfied the Examiners, and have, therefore, been awarded the National Diploma in the Science and Practice of Dairying:—

Elizabeth Allsup, Lancashire County Council Dairy School, Hutton, Preston.
Henrietta Crawford, Midland Agricultural and Dairy College, Kingston, Derby.
Harriett Jessie Crofts, Midland Agricultural and Dairy College, Kingston, Derby.
Ophelia E. A. P. Davies, British Dairy Institute, Reading, and University College of Wales, Aberystwyth.
Gertrude May Evans, Lancashire County Council Dairy School, Hutton, Preston.
Mildred Goulden, Midland Agricultural and Dairy College, Kingston, Derby.
William Frank Hudson, British Dairy Institute, Reading.
Helen Jackman, Lancashire County Council Dairy School, Hutton, Preston.
Marion Agnes Bladon McGregor, Lancashire County Council Dairy School, Hutton, Preston.
Olive Elizabeth Masters, Lancashire County Council Dairy School, Hutton, Preston.
Winifred Mitchell, Lancashire County Council Dairy School, Hutton, Preston.
Raimundo Luis Morello, University College and British Dairy Institute, Reading.
Kate Eveline Nutting, Midland Agricultural and Dairy Institute, Kingston, Derby, and British Dairy Institute, Reading.
Hilda Burrow Preston, British Dairy Institute, Reading.
Hilda Mary Spratt, British Dairy Institute, Reading.
Bernard Weir Sutton, British Dairy Institute, Reading.
Ethel Grace Talbot, British Dairy Institute, Reading.

Muriel Mary Trippe, Midland Agricultural and Dairy College, Kingston, Derby.

Arthur John Wakefield, Harper-Adams Agricultural College, Newport, Salop, and British Dairy Institute, Reading.

Ethel A. Webb, Midland Agricultural and Dairy College, Kingston, Derby.

Nina Catherine Jean Windley, Midland Agricultural and Dairy College, Kingston, Derby.

3. At the Scottish Centre*, twenty-eight candidates were examined, and of these the twenty-two whose names are given below were awarded the Diploma:—

Catherine Emma Aitkenhead, West of Scotland Agricultural College, Glasgow.

Margaret Isobel Armstrong, West of Scotland Agricultural College, Glasgow.

Thomas Humphrey Atkinson, Hawkesbury Agricultural College, Australia, and Dairy School, Kilmarnock.

Isabella S. Bremner, East of Scotland College of Agriculture, Edinburgh.

Mary Rachel Cameron, West of Scotland Agricultural College, Glasgow.

Mary J. Cruickshank, North of Scotland College of Agriculture, Aberdeen.

May Douglas, West of Scotland Agricultural College, Glasgow.

Alison Young Duncan, East of Scotland College of Agriculture, Edinburgh.

Frank Stewart Gordon, East of Scotland College of Agriculture, Edinburgh.

Thomas Hunter Jnr., West of Scotland Agricultural College, Glasgow.

Gwen Jones, University College, Cardiff, and West of Scotland Agricultural College, Glasgow.

Rosina Bell Laidlaw, East of Scotland College of Agriculture, Edinburgh.

John Mailler Lord, Hawkesbury Agricultural College, Australia, and Dairy School, Kilmarnock.

Violet MacNeilage, West of Scotland Agricultural College, Glasgow.

Catherine MacPherson, West of Scotland Agricultural College, Glasgow.

Jack Keith Murray, University of Sydney, Australia, and Dairy School, Kilmarnock.

Thomas Frederick Pettman, Dairy School, Kilmarnock.

Harry Gillies Rae, West of Scotland Agricultural College, Glasgow.

Annie Reid, North of Scotland College of Agriculture, Aberdeen.

Thomas J. S. Smellie, Jnr., West of Scotland Agricultural College, Glasgow.

Royapuram N. K. Sundram, West of Scotland Agricultural College, Glasgow.

Robert Browne Tennent, Queensland Agricultural College, Australia, and Dairy School, Kilmarnock.

4. The examiners at both Centres were:—John Gilchrist, F.S.I., (General Dairying, practical Butter-making, and Capacity for imparting Instruction), John Benson (Cheese-making), and J. F. Tocher, D.Sc., F.I.C. (Chemistry and Bacteriology).

5. "Some of the answers in General Dairying at both Centres," Mr. Gilchrist reports, "showed a want of knowledge

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* All the candidates at the Scottish Centre had had a course at the Kilmarnock Dairy School.

of the practical work necessary on a dairy farm, and answers to questions dealing with values and returns also showed a lack of training on the commercial side. Many of the candidates, particularly at the Scottish Centre, gave evidence of their capacity for giving instruction, and at both Centres the practical work of Butter-making was carried out in a very efficient manner.

"All the arrangements for the examination were very satisfactory."

6. Mr. Benson states that "The work both in theory and practice of the candidates at the English Centre was, on the whole, good. In the practice of cheese-making there was a general improvement over 1918, though, compared with other years, not much progress was noticeable. In the making of pressed cheeses candidates did fairly well, but in the manufacture of blue-veined cheeses a certain section were not so skilful, and the points gained, though sufficient for a pass with a 50 per cent. pass mark, were lower than they ought to have been. In the written and oral examination the results were on the whole satisfactory. Questions dealing with the actual manufacture of cheeses were well answered, but the answers to two or three questions concerning costs of manufacture and the utilization of the by-products of the dairy were indifferent; though in some instances the candidate's position improved in the oral examination.

"At the Scottish Centre, in both theory and practice, the work of almost all the candidates was exceedingly good. In the written and oral examination the results were excellent, and I consider this to be the most satisfactory Examination at which I have officiated. Most of the cheeses made during this examination were excellent, and a credit to those who made them. Candidates at this examination seem to have been carefully selected, and, in my opinion, this is a procedure that should be generally adopted. A number of candidates at this examination were from the Overseas Dominions, and each one gained the Diploma. I was much struck with the excellent manner in which these men worked. They were exceedingly smart and intelligent when making cheese, and their answers in the written examination were clear, concise and correct.

"The milk supply at both centres was very good, and the whole of the arrangements were most satisfactory."

7. Dr. Tocher states that "The candidates at the Reading Centre showed a fair knowledge of the chemical composition of dairy products and of the characters and behaviour of the chief organisms usually associated with milk. As a general rule candidates were not so well prepared in the subject matter of

the syllabus bearing on general chemistry and general bacteriology. The results of the written examination were better on the whole than those of the oral examination.

"Twenty-eight candidates were examined at the Kilmarnock Centre. Of these, three had not only a satisfactory knowledge of the practical applications of chemistry and bacteriology, but also a fairly full knowledge of the subject matter of the syllabus generally. The candidates did better at the oral examination when compared with the orals at Reading, and with their own written papers.

"The results of both written papers and orals at both centres show that 14 per cent. were below the pass standard; 31 per cent. were passable; 29 per cent. were fair; 14 per cent. were good; 9 per cent. were very good; and 3 per cent. attained a degree of excellence equivalent to an honours standard in the technical applications of chemistry and bacteriology to dairying.

"The character and scope of the examination in the elementary chemistry and bacteriology involved in Dairying are precisely and clearly stated in the syllabus. This syllabus is an excellent guide to teachers and, on account of its limited and specific character, should prove no obstacle to dairy students. Keeping these and other essential facts in mind it is clear to me that unpreparedness and not lack of capacity is the chief cause of failure and of the high proportion of students who *just* attain the pass standard in the subject."

CHARLES DOUGLAS,
Chairman.

THOMAS MCROW,
Secretary,

16 Bedford Square, London, W.C.
October, 1919.

ANNUAL REPORT FOR 1919 OF THE PRINCIPAL OF THE ROYAL VETERINARY COLLEGE.

ANTHRAX.

THE following Table shows the number of outbreaks of this disease during the last seven years:—

Year	Outbreaks	Animals attacked
1913	594	652
1914	722	796
1915	575	642
1916	571	687
1917	421	480
1918	245	282
1919	234	314

These figures afford a striking confirmation of the view regarding the principal cause of anthrax in Great Britain that was first put forward in the Annual Report for 1903, viz., that the great majority of the outbreaks have their origin in imported manure or feeding stuffs which are contaminated with the spores of the disease.

The view that had previously found general acceptance was that, broadly regarded, anthrax arose from a local soil infection brought about by want of care in dealing with the carcasses of previous victims of the disease. This was an extension to Great Britain of the view put forward by Pasteur regarding the principal cause of anthrax in France, and it inspired the strict precautions in dealing with anthrax carcasses that have been prescribed in the different Anthrax Orders. That it was wrong gradually became apparent when it was observed (1) that these precautions were having no effect in reducing the number of outbreaks of the disease, and (2) that the great majority of the outbreaks in any year occurred on farms that, according to the obtainable history, had previously been free from the disease. These facts made it impossible to accept a persisting soil infection as the main cause of anthrax in this country, and pointed strongly to a steady introduction of the germs of the disease by some means from abroad. Suspicion gradually settled on foreign feeding stuffs, and it became conviction when in a number of cases it was possible by experiment to prove the actual presence of anthrax germs in the feeding cake or other material in use at the place where an outbreak of anthrax had occurred. Evidence of a similar character indicated that manures wholly or partially composed of imported bones had also to be reckoned among the materials that may start an outbreak of anthrax on a farm previously free from the disease.

It was obvious to every one acquainted with the question that the great reduction in the volume of imported feeding stuffs, which began early in 1917, would prove a crucial test of the view which has just been explained, and in last Annual Report the fact that the outbreaks for 1918 were more than 50 per cent. below those of any previous year was accepted as proof that the theory was correct. At the same time a probable increase in the number of outbreaks in 1919 in consequence of increased importation of feeding stuffs was foretold. The Table would appear to show that this prediction has not been fulfilled, but there was in fact an increase both in outbreaks and in cases during the last half of the year.

Although the events of the past two years have removed all doubt as to the soundness of the view that most outbreaks of anthrax in Great Britain are just as exotic in their origin as those of foot-and-mouth disease, it would be a great mistake to suppose that all outbreaks arise in that way. There are in this country farms on which cases of anthrax occur from time to time among animals that are not receiving any food of foreign origin, and in circumstances that appear to exclude recent infection by manures. In some of these outbreaks one has to assume a persisting soil infection with spores derived from some previous case of anthrax improperly handled; and it cannot be too strongly emphasised that every case of anthrax, however it arises, brings with it a risk of this kind. Hence the strict necessity for dealing with anthrax carcasses in such a way as to ensure the destruction of the germs of the disease in them. In reality, however, carelessness in dealing with carcasses seldom appears to be the explanation of persisting soil infection in this country. Nearly all the bad cases of that kind are on farms where the water supply is contaminated with effluent from tanneries or factories in which foreign hides, wool, or hair are dealt with, or where tannery refuse or bone manure has actually been applied to the land. Cases of anthrax occurring in these conditions are therefore just as exotic in origin as those caused by contaminated feeding stuffs.

GLANDERS.

The following Table shows the number of outbreaks of this disease and the number of animals attacked in each of the last six years:—

Year		Outbreaks		Animals attacked
1914	...	97	...	286
1915	...	50	...	87
1916	...	47	...	117
1917	...	24	...	62
1918	...	34	...	98
1919	...	25	...	61

The figures for the past year must be regarded as eminently satisfactory, since they show that among the entire horse stock of the country (but excluding Army horses) only 61 cases of glanders were detected during the twelve months. This is a much better result than might have been anticipated, having regard to the risk involved in the sale of a very large number of cast Army horses to private owners since the beginning of the year. The danger in this connection and the means by which it might be minimised were pointed out in the previous Annual Report. The result may be said to be the most striking testimony yet produced to the value of the mallein test for the detection of glanders. Now that the disease has been reduced to such a low ebb, and the special facilities for its spread which the War created have disappeared, it ought soon to be possible to bring about its complete and final eradication.

SHEEP SCAB.

The following Table shows the number of reported outbreaks for the past six years:—

Year		Outbreaks
1914	...	226
1915	...	257
1916	...	381
1917	...	543
1918	...	351
1919	...	438

These figures are not satisfactory, as they show that no progress whatever has been made towards the eradication of the disease since 1914, and eradication must be regarded as the aim of the Orders issued by the Board of Agriculture and Fisheries. All the important facts connected with the spread of the disease are now well known, and it is no longer possible to plead difficulties created by the War as an excuse for failure to stamp it out. Every one is ready to admit that there are special difficulties in dealing with the disease in what may be called its perpetual haunts, viz., the large mountain or hill farms in Wales and Scotland, but it cannot be allowed that they are insuperable, or that the measures necessary for the eradication of sheep scab would be intolerable to owners of sheep or impracticable because of their expense.

SWINE FEVER.

The following Table shows the number of confirmed outbreaks of this disease during the past six years:—

Year		Outbreaks
1914	...	4,356
1915	...	3,994
1916	...	4,331
1917	...	2,104
1918	...	1,407
1919	...	2,305

1914 was the last complete year in which outbreaks of the disease were dealt with by the stamping-out method, that is, by compulsory slaughter of all visibly affected animals and of those believed to have been exposed to infection. In that year the number of confirmed outbreaks were 4,356, and 40,000 pigs were slaughtered in dealing with them. The same system was continued till September, 1915, when it was abandoned, compulsory slaughter being then stopped, and serum brought into use for the inoculation of the pigs known to have been exposed to infection. It will be observed that in that year there was a slight fall in the number of outbreaks, but any idea that this was caused by the introduction of serum treatment was negatived by the rise which occurred in 1916. The great reduction in the number of confirmed outbreaks which began in 1917 would be very gratifying if there were any reason for ascribing it to the new method of dealing with the disease, but unfortunately that is not the case. Serum treatment cannot possibly have as good an effect in preventing new outbreaks as slaughter of the diseased and suspected whenever a case is detected, and another cause must therefore be sought for the recent decline. It can scarcely be doubted that the main cause was the reduction in the number of swine which began in 1917, assisted by a simultaneous reduction in the movement of pigs to and from markets for sale; and there is therefore good reason to expect that the upward tendency which the outbreaks have recently shown will be accelerated during the ensuing year.

FOOT-AND-MOUTH DISEASE.

In respect of the number of outbreaks of this disease and the number of counties in which these occurred the past year has been the worst but one (1912) during the present century. The disease was first detected in the West Riding of York in the second week in January, and between that date and the middle of March 19 outbreaks occurred in the same county. After that the country was apparently free from the disease till the last week in July, when an outbreak occurred in Warwickshire, followed by five others in the month of August. In September two outbreaks occurred in Dorset, and the following month the disease reappeared in Warwick, and also showed itself in Cambridge, Huntingdon, the Isle of Wight, and Lincoln. Fresh outbreaks occurred in Surrey in November, and in Warwick, Kent, Sussex and York West Riding in December. Much the most serious of these centres of disease was the one in the Isle of Wight, in which a total of 13 outbreaks occurred before the disease was stamped out.

All the outbreaks were dealt with by the slaughtering-out policy, and with results that were almost immediately successful in preventing the spread of the disease locally except in Yorkshire and the Isle of Wight, in both of which cases there had been a most regrettable delay in notifying the existence of the disease.

It is understood that in no single case did the inquiries instituted by the Board of Agriculture elicit anything to show how the disease was first introduced into any of the counties mentioned, and the events of the past year have therefore only added to the mystery that has always surrounded the origin of outbreaks in this country after comparatively long periods of complete freedom from the disease.

In this connection it is interesting to recall the fact that the disease obtained its first footing in Great Britain in 1839, at which time the importation of live cattle was forbidden.

This fact appears to have been very generally forgotten during the following forty years, throughout the greater part of which period the country was never free from the disease; and when at last it was eradicated in 1892, and the importation of live cattle from countries in which it was known to exist was prohibited, there was a general expectation that for the future the country was safe from this disease at least. The illusion was destroyed by the occurrence of two apparently independent outbreaks, in two different counties in 1893, and there was a like experience in the following year. Since that time the disease has been stamped out and reintroduced on a great many occasions, but it is a curious fact that during three successive periods of five years each, viz. 1887-91, 1895-99, and 1903-07, the country was completely free from it, and that these alternated with periods of three years in each of which fresh introductions of the disease took place. The only other years since 1892 in which a fresh introduction did not occur were 1909 and 1917.

There is hardly any other disease, human or animal, which presents such a difficult problem in connection with its dissemination. Such intermediary agents as human beings, hay or straw, and articles of food appear to have been definitely excluded in nearly all the outbreaks in recent years. The carriage of the virus from the Continent by birds, or even in the atmosphere, has been suggested as possible, but cannot be admitted as probable.

It need hardly be said that there is now no room for doubt that the reappearance of the disease at intervals is due to an actual reintroduction, and not to temporary survival of the virus from previous outbreaks in this country. The latter supposition is completely contradicted by the fact that in no case has a fresh outbreak in any year been at the seat of a previous one. On the other hand, a circumstance that stands out prominently in connection with the history of the disease is that its reintroduction here has usually corresponded with a period of exceptional prevalence in France, Belgium, and Holland. In these countries the present epizootic will probably soon begin to show a decline, and in that event Great Britain may again have complete freedom from the disease for several years. Meanwhile, however, further outbreaks are likely to occur, and for the avoidance of serious results reliance must be placed on early notification of every suspicious case. It is therefore appropriate to quote here the following sentences from the article on foot-and-mouth disease which appeared in Vol. 73 of the Society's Journal:—

"The stock-owner or other layman should be solemnly warned not to take upon himself the responsibility of deciding whether any suspected case is one of foot-and-mouth disease or not. His duty under the law is to report any justifiable suspicion without delay to the police of the district; and it is all-important to remember that simultaneous lameness and slavering at the mouth, even in a single animal, ought to raise a suspicion of foot-and-mouth disease."

RABIES.

The number of cases of rabies confirmed by the Board of Agriculture in 1919 was 155, of which 150 were in dogs and the remainder in other animals. The number in the previous year was 108, of which 98 were in dogs.

The way in which the cases were distributed during the past year is shown in the following Table, in which the spaces between the vertical lines indicate successive periods of four weeks.

	Periods of four weeks.													Total.
	1	2	3	4	5	6	7	8	9	10	11	12	13	
Cornwall . .	7	1	1	—	2	—	—	—	—	—	—	—	—	11
Devon . .	9	2	3	2	1	1	—	—	1	—	—	—	—	19
Monmouth .	—	—	3	1	1	2	1	3	—	—	1	—	—	12
Glamorgan .	—	—	1	20	21	17	5	7	4	1	3	—	1	80
Gloucester .	—	—	—	1	1	—	—	—	—	—	—	—	—	2
Middlesex . .	—	—	—	1	2	2	2	—	—	—	—	—	—	7
Surrey . .	—	—	—	1	4	2	1	3	—	—	—	—	—	11
Kent . . .	—	—	—	—	2	—	—	—	—	—	—	—	1	3
London . .	—	—	—	—	1	—	—	—	—	—	—	—	—	1
Berks . .	—	—	—	—	—	—	1	—	—	—	—	—	—	1
Essex . .	—	—	—	—	—	—	—	—	3	1	1	—	—	5
Brecon . .	—	—	—	—	—	—	—	—	1	—	—	—	—	1
Buckingham .	—	—	—	—	—	—	—	—	—	—	—	1	—	1
Oxford . .	—	—	—	—	—	—	—	—	—	—	—	1	—	1

As the Table shows, in the early part of the year the disease continued to be confined to Devon and Cornwall, but in the month of March it was detected in Monmouth and Glamorgan, and subsequently the latter county contributed an alarming number of cases. Only one case occurred in Devon and Cornwall in the second half of the year, and in the other counties the maximum number was eleven (in Surrey).

As was proved by subsequent inquiry, the disease had been in existence in Devon for some considerable time in 1918 before the first case was notified, and the sequence of the cases in Monmouth and Glamorgan during the past year suggests that there also the first cases were never detected or reported.

Upon the whole the position reached at the end of the year was much better than might have been anticipated, and great credit is due to the Board of Agriculture and Fisheries for the success of the measures taken to deal with the disease.

PARASITIC MANGE.

The incidence of mange in horses during each of the last four years is shown in the following Table :—

Year	Outbreaks	Animals attacked
1916	2,147	4,689
1917	2,614	4,873
1918	4,463	8,377
1919	5,016	9,861

These figures are very unsatisfactory, and suggest that the provisions of the Mange Orders with regard to notification and treatment are frequently ignored. It is unfortunately very easy to pass on by sale a horse that is suspected but has not yet developed any symptoms of mange, and there appears to be no way of checking the practice except by prosecution and the infliction of deterrent penalties when a conviction is obtained.

While the disease continues to be prevalent those who have to purchase horses of which the recent history is unknown would do well to keep them isolated for a week or two, or, failing that, to have them subjected to precautionary treatment, as recommended in last Annual Report.

MARE ABORTION AND JOINT-ILL IN FOALS.

Investigations with regard to outbreaks of abortion in mares and cases of joint-ill in foals were begun at the Royal Veterinary College in 1916, and a reference to the results then obtained was included in the annual report for 1917.

Abortion.—The investigations which have been made during the last two years have brought to light further important facts, especially with regard to the cause. They confirm the view, based on the result of the earlier observations, that outbreaks of abortion in mares in this country are generally due to an organism termed the bacillus abortivo-equinus, which had previously been incriminated as the cause of abortion in mares in Holland and the United States of America. When introduced into a stud containing pregnant mares the disease proves intensely contagious, and the usual period of incubation appears to be about a week. In all the outbreaks hitherto investigated in this country the affected mares have been within a month or two of full term, and in none of the cases has it been possible to obtain precise information to show how the infection was introduced. The facts have not given any support to the idea that the stallion has anything to do with the spread of the disease. As a rule the health of the mares has not suffered seriously as a result of the abortion, but a severe attack of inflammation of the womb has followed in some cases.

Whether any given case of abortion is of this contagious nature or not can now be readily ascertained by applying the agglutination test to blood from the mare, and this is probably the chief practical outcome of the investigations so far.

Contrary to what is known to be the case in Epizootic Abortion in cows, the observations made so far would appear to show that with few, if any, exceptions mares make a complete recovery within the year following the abortion and carry their next foals to full term.

The available information suggests that at the present time the disease has not obtained a wide footing in Great Britain, but the too frequent adoption of a policy of secrecy when an outbreak occurs makes it impossible to say with any confidence to what extent it prevails. In favourable circumstances, such as always exist in large breeding studs, it spreads with alarming rapidity if the proper precautions are not promptly taken, and it can be readily carried to new stables by the introduction of an infected mare.

It is very desirable that the widest possible publicity should be given to the fact that the disease, if concealed or neglected, may become a serious menace to horse breeding in this country. Members of the Society who suspect its existence are invited to apply immediately to the College for advice with regard to diagnosis and the methods by which the further spread of the disease may be stopped.

Joint-ill.—The investigations with regard to the treatment of joint-ill in foals have brought to light a number of facts which are far from reassuring. The most important of these is that the term joint-ill does not connote a single disease, but an actual group of diseases that are quite independent and have little in common except that they are caused by bacteria which gain entrance to the body of the foal at the umbilicus or navel and cause acute inflammation of the joints. The recognition of this fact makes it obvious that there can be no specific remedy for what is called joint-ill.

For a number of years what is termed anti-streptococcus serum has been extensively employed both for the cure and prevention of cases of joint-ill on the assumption that streptococci are the only bacteria responsible for the disease, but since it is now known that only about half of the cases of joint disease in young foals are of that kind, and that four or five other species of bacteria are concerned in the production of the remaining half it is clear that in about every second case treated in this way the serum cannot be of any service. And this applies also to the use of what are termed anti-streptococcus vaccines. When it is added that it is at present impossible while the foal is still alive to determine quickly what is the kind of joint-ill from which it is suffering the difficulty in the way of rational treatment by any kind of serum or vaccine will be understood, but what precedes is unfortunately not a full statement of the case against the treatment of joint-ill by serum. During the past year a specially prepared anti-streptococcus serum was supplied gratis for the treatment of joint-ill in foals, and particulars were obtained regarding the result in 253 cases. These showed that 51 per cent. of the foals died, a proportion which previous observations had shown to be approximately the ordinary rate of mortality in foals affected with joint-ill. The information obtained with regard to the results in which the serum was given to healthy foals at or soon after birth was less extensive, but that also indicated that the serum had little or no value for the prevention of the disease.

As previously stated, the different diseases which are grouped together under the heading of joint-ill have one point in common, viz., that in the immense majority of cases the starting point of the disease is an infection of the navel with what may be called dirt organisms. Recent investigations contradict the view that the disease is ordinarily contagious, or that it has anything to do with the health of the mare. It is, so to speak, an accidental occurrence, analogous to the infection which is always possible if earth or other forms of dirt obtain access to an ordinary wound. In the meantime it is only by taking precautions to prevent this infection of the foal's navel during the week after birth that anything useful can be done to prevent the disease.

INFLAMMATION OF THE UDDER IN COWS.

It is intended during the ensuing year to institute an inquiry with regard to the cause and treatment of this condition, and members of the Society who have outbreaks of "garget" in their herds are invited to communicate with the College.

Royal Veterinary College,
London, N.W.1.

JOHN MCFADYEAN.

ANNUAL REPORT FOR 1919 OF THE CONSULTING CHEMIST.

The year 1919, though it was the first one of peace conditions since the War terminated, was yet marked by a continuation of those difficulties, as regards the farming community, to which allusion was made in last year's Report. The scarcity of supplies of both feeding stuffs and fertilisers was severely felt, and, along with this, was an all-round rising of prices which accentuated the trouble experienced. Nevertheless, the work of the Society's laboratory has been carried on, and, I may venture to claim, with no diminution of activity or of usefulness, and it is satisfactory to record that an increase of 78 in the number of samples submitted by Members, viz. 419 as against 341, took place. It is true that this increase is one rather apparent than real, being due largely to the fact of one Member having sent a large number of samples of milk from his cows (a British-Friesian herd) for analysis.

Another feature of the year was the renewal of the Annual Country Shows of the Society, and in connection with the Cardiff Show there were, additional to the above, 88 samples of milk and 23 samples of cider analysed.

There has been no marked change in the class of materials sent for analysis, though linseed cakes once again figure more largely, as do compound cakes and meals. Soils also have been sent in considerable number. Although the immediate call for the breaking up of grass land and putting it into corn has passed, there have been a considerable number of inquiries from those wishing to know what their soils really contain and how best to improve them. I have always maintained, in opposition to the views expressed by some of my professional brethren, that soil analysis, in capable hands, is able frequently to afford much guidance as to the capabilities and treatment of land, and I have seldom had this brought home to me so much as of late. Every one is ready to admit that analysis of soil is useful for telling if a soil wants liming or not, but I am prepared to extend the possibilities of usefulness to other constituents also, notably the organic matter, phosphoric acid, and potash, while my recent work at Woburn has clearly brought out that the presence of magnesia is an item not to be ignored. The examination of soils in late years has, it is true, shown that in a great many cases it is lime mainly that has been lacking, and the necessity of a return to the good old practice of regularly liming land has been made very apparent. It is unfortunate that, along with other things, the price of lime has markedly gone up, nor have the substitutes for lump lime and chalk in ground lime, powdered limestone, &c., been found altogether satisfactory or remunerative.

In such times as we have been passing through, one can hardly look for the introduction of any new forms of fertilisers or feeding stuffs, and, beyond the coming in of a certain amount of potash salts from the Alsace-Lorraine deposits, there is little to record. Flue-dust, which, at one time during the war, came into some prominence, has not made much advance, nor come regularly into use, nor is it likely in the future to supply the call for potash. At the same time, and while the advent of the new potash supplies will be welcomed for certain special crops and on particular soils. it has to be remembered that experience during the war period brought out very clearly that our agricultural dependence upon potash has been considerably exaggerated in the past, for during this later period there was no evidence that I know of adduced to show that any land had really suffered from the enforced withholding of potash. Nor has any more been heard of "war-time" superphosphate, made from nitre-cake, but superphosphate-making and the manufacture of compound manures have reverted, more or less, to the old methods.

Sulphate of ammonia has continued to be the chief source of nitrogenous supply, and a certain amount of nitrate of soda has also been procurable, but neither cyanamide, nitrate of lime, nor the more recent introduction, nitrate of ammonia, has come into extensive use. There is little doubt, however, that, before long, important developments will take place in the production of these latter materials, in which atmospheric nitrogen is utilised. The War clearly showed how, by having under their control the manufacture of nitrates from the air, our enemies were able to prolong the time of their holding out, and, for many months past, workers in France and in our own country have been seeking further and more economical means of manufacture. These are now beginning to materialise, and it may safely be predicted that before long we shall have at our command the means of producing nitrogenous fertilisers from atmospheric sources, and in such a way as to render us independent of German resources or of the imported nitrate of soda. Which form the supply will eventually take is uncertain, whether it be as cyanamide, nitrate of lime, nitrate of ammonia or yet some other; but that, before long, we shall be able to supply the recurring and increasing demands of our agriculture, without being dependent on foreign sources, is quite certain.

Raw phosphatic materials, mainly as Gafsa phosphate, have been coming rather more freely than before, and manufacturers of artificial manures are fairly supplied, on the whole.

But bones and similar materials are still very scarce, and the prices for them are quite abnormally high, as is that for dried blood, &c.

Control of prices, both for fertilisers and feeding stuffs, has been removed, and the regulations for compound fertilisers and for compound feeding cakes and meals no longer rule. At the same time a kind of general agreement has been come to between the Government Departments concerned and the producers and importers, by which arranged prices only are charged to the farmer, and, so far, this has worked satisfactorily and to the latter's benefit. All the prices, as compared with pre-war ones, are very high, but there has not, it must be allowed, been that tendency, which previously often existed, to charge prices out of all reason when actual fertilising or feeding value was taken into account.

For sulphate of ammonia, prices ranged from 20*l.* to 21*l.* per ton, with nitrate of soda at 20*l.* per ton. Superphosphate, owing to scarcity of raw material, rose to 7*l.* and more per ton, a great contrast to the 50*s.* a ton of some ten years back. Basic slag has been very scarce, and what has come to hand has been of much lower quality than before. Indeed, buyers have had to take just what they could get, and be content with 22 per cent. phosphates or 30 per cent. at most.

The prices of feeding stuffs, while high, have been more steady, and linseed cake has settled down to a figure of about 25*l.* a ton, with undecorticated cotton cake at 19*l.* per ton and palm-nut cake rather lower, while compound cakes have cost about 22*l.* or 23*l.* per ton.

If I were asked what the general position was in 1919 as compared with 1918 in regard to adulteration and misrepresentation of articles sold to farmers, I should say that there had been an improvement. There have certainly been less of the inferior and often almost worthless materials put on the market than used to be the case.

To this improvement the "Occasional Notes" periodically issued by this Society to its members have in no small measure contributed. Two such issues were published in 1919, viz., in March and in July. In these, attention was specially called to (*a*) the occurrence of salt in pig and poultry foods, and to losses arising from this; (*b*) the not infrequent presence of castor-oil bean in feeding materials; and (*c*) the deterioration in quality of decorticated cotton cake and meal. The last-named constitutes, unfortunately, more than a passing difficulty, for the habit seems now to have become almost universal to remove the husk in the "decorticating" process, and then to put it, or some of it at least, back again, and still sell the product as "decorticated." As this takes place in America, it is not easy to put a stop to the practice, but it is a very improper one, and the result has been that the old character and high quality—alike for feeding and manurial purposes—of decorticated cotton cake has largely become a thing of the past, for what is sold now under that name is frequently little better than ordinary, or undecorticated, cotton cake. Importers and merchants on this side say that they are powerless, and have to take what is sent to them or leave it alone. But even this does not constitute a justification for the selling, under the name of "decorticated," what is clearly *not* decorticated, and still less for charging for it as decorticated, the difference of price between the two kinds being fully 5*l.* or even 6*l.* a ton.

The time has now come for more vigorous action to be taken to secure much needed amendments of the Fertilisers and Feeding Stuffs Act. Defects in the Act have become so apparent that in many parts of the country the Act is never brought into operation at all. More than this, it cannot but be felt that the Board of Agriculture has in the past shown a great disinclination to prosecute in cases brought to its notice, and has been over-ready to accept any excuse put forward by the trader. The result of this has been to discourage any energetic working of the Act by County Councils and local authorities. Tired, in many cases, of the "turning down" by the Board of their applications for the institution of proceedings against vendors, the local authorities have allowed the Act to lapse, and it is only here and there that some energetic inspector or agricultural analyst still has the courage to pursue his work under the discouraging surroundings. In most places the Act has, for practical purposes, become a "dead letter." This should not be so, for, if properly administered, it should, even as it stands, be a considerable protection to the farmer. But the need of amendment in some main particulars has also been abundantly made clear. During the continuance of the War the Board of Agriculture, with reason no doubt, felt that no amendment could well be made, and the numerous suggestions for amendment that were sent in were "filed for reference." But now that the period of reconstruction has been reached, it is high time that these suggestions were considered by the new Ministry of Agriculture. Up to the present various bodies have sent in their separate suggestions, but it is now time for united action, and it is hoped that these various bodies will now co-operate in a joint representation and in demanding of the Ministry much-needed amendments of the present Act, or else a new Act altogether.

Prominent among the causes which have led to the present Act being so largely inoperative are two: (*a*) the shortness of the "time limit" within which formal samples must be taken or prosecutions be set on foot; (*b*) the veto exercised by the Board as to the institution of prosecutions. Experience has shown that there is absolutely no reason for having such short time limits as the Act enjoins, and which were inserted purely in the interests of traders. Further, the taking away from County Councils, &c., the right of prosecuting on their own initiative has taken from them also any interest or stimulus in making the working of the Act effective. These are two points which should certainly be amended. There are many others of lesser importance and to which reference has been made from time to time. Among these are the devices resorted to in order to "contract out of" the Act, by the giving of guarantees with a "saving clause" which really nullifies the guarantee. Of this nature is the statement often made in the sale of feeding stuffs, that "any article not specially described as 'pure' is to be understood as being mixed with other seeds or materials." Another is a statement made use of in the sale of shoddy and similar waste materials, to the effect that "this material is not sold as a fertiliser of the soil." Yet another "trade practice" directly contrary to the provisions of the Act is that, common among importers and traders alike, of guaranteeing the oil and albuminoids *together*, in the case of decorticated cotton cake, instead of stating each constituent separately, as required by the Act. Another needed amendment is the inclusion under the Act of such materials as lime and soot.

The periodical issue of "Occasional Notes," in which matters of interest at the time, or cases of adulteration or overcharge, are mentioned, makes it unnecessary for me to dwell in the present report at such length as usual on what has been brought to my notice during the year, and I will confine myself mainly to points not already alluded to.

A. FEEDING STUFFS.

Linseed cakes, as observed, have been restored to the list, but the number of cakes, &c., of other kinds, apart from compound cakes and meals, has been but small. The number of waste materials of uncertain value has, happily, been less. Fish meal, as a feeding material, has come more extensively into use, especially for pigs and poultry, and also for calf-rearing, and, provided that it does not contain excess of salt or of oil, there is no question that it may, if used in moderation, be usefully employed. The producers now guarantee that it shall not contain above 5 per cent. of oil or 4 per cent. of salt.

1. *Linseed (Cake, Oil, and Chaff.)*

The linseed cakes sent were, with one exception, pure. Of linseed oil one sample was sent which proved, on examination, to contain a quantity of lead. It had been used by a wheelwright for the preparation of paint, and it was fortunate that the purchaser sent up a sample before giving it, as he had intended, to his cattle. Samples of flax "bols" and flax chaff from home-grown linseed were submitted and gave the following results :—

	Flax "bols"		Flax chaff
	A	B	C
	Per cent.	Per cent.	Per cent.
Moisture	15·10	15·61	11·17
Oil	6·81	7·54	3·34
[1]Albuminoids	8·37	11·56	7·12
Carbohydrates, &c.	33·68	36·19	34·12
Woody fibre	29·39	22·69	25·93
[2]Mineral matter	6·65	6·41	18·32
	100·00	100·00	100·00
[1]containing nitrogen	1·34	1·85	1·14
[2]including sand	·64	·35	11·82

The flax "bols" contained a certain amount of linseed and might well be used as adjuncts in feeding. The flax chaff was, however, much poorer and also had a great deal of dirt. It was offered at 3*l.* a ton, which is more than value for such material.

2. *Cotton Cakes and Meals—Decorticated and undecorticated.*

Reference has been made to the deterioration of decorticated cotton cake, much of that now sold being, at the best, semi-decorticated only, or, often, little better than the undecorticated cake or meal. One such case is set out in full in "Occasional Notes" No. 7 (July, 1919). In this cake the oil was only 5·67 per cent. and the cake had over 15 per cent. of fibre. In a second instance the oil was 7·18 per cent., albuminoids 28·68 per cent. only, and fibre 15·37 per cent., although the guarantee given was oil 10 per cent., albuminoids 40 per cent.

3. *Earth-nut (Ground-nut) Cake.*

This cake is subject to the same disabilities that decorticated cotton cake has; cake either undecorticated, or, at best, semi-decorticated, being liable to be sold as "decorticated." This is harder to detect in the case of earth-nut cake than with cotton cake. In one instance a cake sold as "decorticated" was found to contain 22·69 per cent. of woody fibre, and was only partially decorticated. It had been sold at 26*l.* 5*s.* per ton, and an allowance of 2*l.* a ton was made by the vendors. This class of cake is still liable to contain excessive sand, and castor-oil bean is also not unfrequently found present in it. In one case (*see* "Occasional Notes" No. 7, July, 1919) as much as 6·86 per cent. of sand was found.

4. *Compound Feeding Meals, Pig Meals, &c.*

Among this varied class have been found materials often of little value and sold at perfectly absurd prices. "Occasional Notes," No. 6 (March, 1919), mentions the case of a pig meal sold at 24*l.* 15*s.* per ton and containing nearly 19 per cent. of gypsum (sulphate of lime), and another where a meal sold at 18*l.* a ton was nothing but sweepings of floors and screenings from seed-cleaning and contained no less than 62 per cent. of sand!

Materials which are the products of milling processes and special food preparations not infrequently are found to be of very doubtful value. One such, sold for pig-feeding, was found to have over 9 per cent. of salt, while, in another case, the refuse from the manufacture of pearl barley, and sold as "Scotch Feeding Meal" at 26*l.* per ton, contained no less than 50 per cent. of barley husk.

B. FERTILISERS.

There is little to say, more than has already been said, about the more ordinary fertilisers—superphosphate, basic slag, sulphate of ammonia, &c. Bone manures, because of the abnormally high price of bones, have been almost unprocurable, and compound fertilisers have hardly regained their old position. In "Occasional Notes," No. 7 (July, 1919), attention was called to a fertiliser sold at a price over four times its value and stated to contain "secrets" in the form of "humus forming products." Basic slag was, in one instance, found to be adulterated with ordinary slag, and in another instance finely ground rock material of no fertilising value was sold at 11*l.* 9*s.* a ton. Both these cases are set out in "Occasional Notes," No. 7.

1. *Flue Dust.*

In the earlier part of the year some samples of this were sent and proved to be very variable in quality. Later on, as the new potash salts came in, flue dust dropped off as a potash supply, and it does not appear to have been, in its raw state, very successful or likely to become a regular source of potash. Analyses of samples sent were :—

	A	B	C
	Per cent.	Per cent.	Per cent.
Potash	5·98	·93	·50
equal to sulphate of potash	11·07	1·72	·92
Silica	22·06	44·49	28·77

"A" cost (January, 1919) 83*s.* per ton f.o.r. "B" was flue dust from tannery works. "C" was from boiler flues at mills. Neither "B" nor "C" was worth using except, possibly, for mixing with artificial manures and applying along with them.

2 *Potash Salts.*

Among the samples sent were some from the Alsace-Lorraine deposits, also one called "Sulpho-Potash Manure"—all of them quite good of their kind.

	A	B	C	D
	Alsace-Lorraine Kainit.		Sulpho-Potash Manure.	Potash Salts (Salt Union).
	Per cent.	Per cent.	Per cent.	Per cent.
Potash	13·16	13·74	9·12	18·34
equal to sulphate of potash	24·36	25·43	16·88	33·95
Moisture	1·92	2·33	29·16	—

"A" cost 7*l.* per ton in London and "C" 6*l.* 12*s.* per ton at works. "D" was from the Salt Union, Runcorn, and cost 15*l.* per ton; the potash, however, was present mostly as chloride.

3. *Sulphate of Soda.*

A sample, stated to be a bye-product obtained at Government works at Swindon, was found to be sulphate of soda but to contain also some quantity of nitrates, which, despite the objection to soda salts in quantity on the land, might make it worth using. It gave:—

	Per cent.
Nitric acid	1·31
equal to nitrate of soda	4·12

4. *Lime, Limestone, Chalk.*

Analyses of lime, &c., during the past year have shown these to be of decidedly variable quality, and, as already stated, it is very desirable that this material be brought under the Fertilisers, &c., Act, and be sold under a definite guarantee. The samples of chalk, both from home supplies, were good, and, where such can be found close at hand, it would be a mistake to go further afield and purchase lime.

	A	B	C	D	E	F
	Lime		Chalk		Limestone	Spent Gas Lime
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Oxide of iron and alumina . .	6·82	1·09	·20	·29	4·35	1·46
Lime	63·31	—	—	—	24·89	28·40
Carbonate of lime .	—	92·07	96·82	86·65	—	—
Silica	12·35	1·79	1·09	·49	48·61	3·18
Magnesia . . .	1·14	·39	—	·66	22·15	·47
Moisture, carbonic acid, etc. . .	16·38	4·66	1·89	11·91		66·49
	100·00	100·00	100·00	100·00	100·00	100·00

"A" was Evercreech (Somerset) lime and not of high quality at all; it contained much silica, and was not well burnt; its cost was 26*s*. per ton f.o.r. "B" was called "atomised lime," and was of good quality and finely ground. It cost 42*s*. 6*d*. per ton f.o.r. "C" came from Hampshire, "D" from the Sussex Downs, both being good and pure. "E" was from the bastard limestone in Herefordshire and was very inferior, containing much lime as silicate. "F" was very wet and had but little lime in it.

5. *Refuse Manures.*

These, which frequently are composed, partly or wholly, of sewage matter and town refuse, &c., are also very variable in character. Much depends upon the state to which they have been dried, either naturally or artificially, and also upon their mechanical condition and ease of distribution. Their nature does not allow of transportation to any distance, but, where land is light and in need of more organic matter, or, on the other hand, where soil is heavy and requires "opening-out," they may often be found to possess special value, more particularly for the growing of vegetable and market-garden crops. But care must be taken in their purchase, for, while some may be worth getting, others are far too dear, and yet others may be almost worthless.

	A Manchester Corporation Dried Sewage Manure Per cent.	B Carlisle Sewage Manure Per cent.	C Kingston-on-Thames Manure Per cent.
Moisture	5·85	9·72	48·16
Organic matter	39·60	52·02	12·14
Oxide of iron and alumina	8·95	5·11	5·50
Phosphate of lime	3·71	2·32	1·00
Carbonate of lime, &c.	11·02	5·13	20·25
Sand	30·87	25·70	12·95
	100·00	100·00	100·00
Nitrogen	1·60	2·75	·48
equal to ammonia	1·94	3·34	·58

"A" cost 4*l*. 7*s*. 6*d*. per ton, which must be considered a very high price, and compares badly with "B," which could be had locally for 9*d*. per load. "C" was a much wetter material, but, on land for which such would be suitable, the price 1*l*. per ton delivered would not be excessive.

6. *Leather.*

Efforts have been continued to make this material useful for agricultural purposes. I have tried it at the Woburn Experimental Farm, both in the powdered natural state and as artificially prepared (by treatment with sulphuric acid). But with neither have I so far seen any benefit. Plots on which swedes were grown with the two kinds of leather in 1919 side by side with other plots containing the same amount of nitrogen in the form of sulphate of ammonia, stood out by reason of their marked inferiority. Experiments by pot-culture methods similarly failed to show any benefit accruing from the use of leather, either natural or prepared, as a manurial agent.

C. MISCELLANEOUS.

1. *Sugar Beet.*

A sample of sugar-beet, grown in 1918 on land near Colchester, gave the following figures :—

	Per cent.
Water	74·88
Sugar	17·10
Albuminoids	1·44
Crude fibre, &c.	6·03
Mineral matter	·55
	100·00

These were not specially grown for sugar-yielding purposes, and the crop was from twelve to fifteen tons per acre. The roots were well-shapen and the percentage of sugar was quite good, roots from the Kelham Estate (Newark) yielding, that season, about 18 per cent. of sugar.

2. *Suction-gas Plant Refuse.*

It may be of interest to give the analysis of this, as it has frequently been asked whether this material has any manurial value. The results show that it is practically useless.

	Per cent.
Moisture	58·36
[1] Carbonaceous matter	39·39
Oxide of iron and alumina	·30
Lime	·49
[2] Phosphoric acid	·09
Magnesia, &c.	·28
Silica	1·09
	100·00
[1] containing Nitrogen	·26
equal to ammonia	·31
[2] equal to phosphate of lime	·19

3. *Soil with excess of Magnesia.*

I have frequently had occasion to refer to the presence of magnesia in excess of the lime, as constituting an undesirable feature in soils. A soil sent me from Dundalk gave :—

(In the dried soil)	Per cent.
Lime	·66
Magnesia	1·42

This was a heavy loam with heavy clay subsoil. It had been in grass, and had never done well, though dressed several times with basic slag. In 1917 it was ploughed up and put in oats, but they did very badly also, the straw being weak and the heads small. I have little doubt but that the high magnesia is the cause of the trouble, and that the best thing to do is to lime the land well.

The following is a list of the samples submitted to me by members during the twelve months December 1, 1918, to November 30, 1919:—

Linseed cakes and meals	13
Cotton cakes and meals	4
Compound feeding cakes and meals	80
Palm-nut cakes	3
Ground-nut cakes	1
Cereals, offals, &c.	14
Superphosphates	5
Compound manures	15
Raw and steamed bones	4
Meat meal	5
Fish meal	3
Basic slag	14
Nitrate of soda	1
Sulphate of ammonia	3
Flue dust	6
Potash materials	3
Shoddy, wool dust, &c.	42
Refuse manures	4
Lime, chalk, &c.	9
Waters	22
Milk, butter, &c.	116
Soils	38
Miscellaneous	14
Total	419

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1, Tudor Street, E.C.4.
January, 1920.

ANNUAL REPORT FOR 1919 OF THE BOTANIST.

Beyond the continued falling off in the number of samples of seed received for testing in the Botanical Department the year's work shows no marked differences from that of the two past seasons. The increased interest shown in the cultivation of the two staple food crops, wheat and potatoes, is reflected in the number of inquiries concerning these crops. In the former case attention was focused almost exclusively on the problem of obtaining the maximum yield per acre, whilst in the latter the subjects on which information was required were mainly of a pathological nature. The management of grass-land has again been the subject of relatively few inquiries, but several members have taken sufficient interest in the flora of their meadows to require the identification of all the grass specimens they could find in flower. Queries regarding the cultivation of fruit though not more numerous than usual cover a wider range.

Wheat.—The long spell of wet weather during the autumn of 1918 resulted, as was only to be expected, in inquiries in the following spring as to the possibility of patching thin crops and of sowing various winter wheats at abnormally late dates. No failures of the latter were reported, though some particularly risky sowings were made as late as the end of March. The diseases to which the crop is subject do not appear to have been particularly troublesome for fewer inquiries of a pathological nature were received. Nevertheless one disease—the black rust—was rather prevalent throughout the country and in several districts it is known to have done a considerable amount of damage. The disease was present in the previous year, but the attacks came too late in the season to cause much loss. This year, however, they appear to have been earlier. Whilst the position is not serious at present it gives rise to some uneasiness, for black rust is one of the worst diseases to which the crop is liable, and there are grounds for believing that it may become too common here. No satisfactory methods of preventing its spread are known except to grow black-rust-resisting varieties, none of which happen to be suitable for English conditions.

Barley and Oats.—With the exception of a few inquiries on the value of various "steeps" for the prevention of smut in these cereals, most of the information required dealt with the choice of varieties for more or less exceptional conditions, such as oats for freshly-broken ground, for sour soils and for exposed situations at a considerable elevation, and barley for autumn-planting.

Two members further inquired whether the new Wolfryn process of "electrifying" seed could be relied upon to improve the yield of their barley crops. So little experimental work has been possible during the past five years that we still lack a sufficient number of critical trials to test its value, and in replying I had to fall back upon two carefully controlled tests made some years ago by the School of Agriculture, Cambridge, neither of which showed that "electrified" seed was superior to normal seed.

Potatoes.—More than usual attention has been paid to the potato crop this season, probably on account of the measures now being enforced to limit the spread of the wart-disease. Of the specimens suspected to be attacked by this disease only one proved to be a genuine case. Where an outbreak has occurred the only courses open are either to refrain from growing potatoes on the same soil for some seven or eight years, or, better still, only to grow varieties which are immune to its attacks. Unfortunately many of the most popular varieties such as British Queen, Epicure, Duke of York, Sir John Llewellyn, King Edward, President, Up-to-date, Factor, Table-Talk, Sharpe's Express, Arran Chief, Ringleader, &c., are particularly susceptible to the disease. But the comprehensive trials carried out by the Board of Agriculture at Ormskirk[1] have shown that many varieties are so completely immune that they can safely be grown even on infected soil. At present the choice amongst immune early varieties is a limited one, and the only varieties readily obtainable are Edzell Blue, Witch Hill and Dargill Early. The foremost, as its name suggests, has a coloured tuber, and it is neither very early nor of first-class quality. Both of the others are promising new sorts, though whether they will prove as valuable as Epicure remains to be seen. Amongst the second earlies are such good types as Great Scot, The Ally and Arran Comrade, whilst among late varieties a choice can be made from Abundance, The Lochar, Leinster Wonder, Templar, Kerr's Pink, Flour-ball, White City, Langworthy and Majestic.

The disease known as Black Leg was sent in for examination on four occasions, the first one as early as the middle of June. The stunted growth and the sickly yellowish green colour of the foliage make infected plants somewhat conspicuous especially before the haulms of the healthy plants have attained to their full size. If one of these sickly plants is lightly pulled the stems break readily at ground level and the lower parts are found to be blackened and more or less decayed. The discolouration may extend up the haulm and down into the tubers. Where the tubers have become infected they may either rot in the soil or, perhaps more frequently, when stored in clamps. No satisfactory curative measures are known, and at present the only way of controlling the disease is to make certain that no infected tubers are planted.

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[1] Supplement to the Journal of the Board of Agriculture, Vol. XXV., 1918, page 68.

Amongst the other potato troubles reported on were two cases of failure to sprout satisfactorily. The varieties in which this occurred were King Edward and British Queen, the seed coming in both cases from Scotland. All of the tubers examined showed the characteristic symptoms of the obscure disease known as "skin-spot." Potato-disease or "blight" does not appear to have done quite as much damage as usual this season, though in the autumn the foliage was killed back very thoroughly in many districts.

Roots.—The frequent failure to obtain a plant owing to the excessively dry weather during April and May led to several belated tests of the germinating capacity of the mangold seed sown, one of the analyses being made with seeds which had been picked out of the soil. In each case the germination was found to be satisfactory, and subsequent reports stated that a plant had been obtained, though in one case its beginnings were only discovered when a start was made to drill the field with swedes. The swede crop was sown under somewhat better conditions, and no similar failures were reported.

Neither crop seems to have suffered much from disease, and beyond one inquiry on the quantities of lime to be used in dressing fields infected with the "finger-and-toe" fungus no information on the subject was required.

Leguminous Crops.—No problems of especial interest arose in connection with the cultivation of beans, peas and the various clovers, but the fact must be recorded that "crown-gall," a disease hitherto considered to be rare in this country, has become very common in the lucerne-growing districts of the eastern counties.

Fruit.—The inquiries covered a wide range, including the Lorette system of pruning, the choice of stocks, the suitability of different varieties of apples and pears for northern districts, the use of fungicides, and the control of diseases. Amongst the fungoid pests were curl and mildew on the peach, mildew on apple and gooseberry, brown rot and scab on the apple, and botrytis on cherry. Silver-leaf on plum was the subject of nine separate inquiries. In one case the variety Czar was attacked, the remaining cases being attacks on the Victoria plum. There is now no room for doubt that the fungus responsible for this disease is spreading steadily, and though there is still too little definite information regarding the susceptibility or otherwise of the different varieties of plums to its attack, it is clear that the variety Victoria is so exceptionally liable to the disease that its further planting should not be contemplated. The same may be true of the variety Czar, though the case against it is not so well proved. During the past year further reports have been published on the value of methods stated to be effective in coping with the disease. The use of these methods has not led to curing the disease and at present the one method of dealing with its attacks is to stub out and burn infected trees.

The "glassy disease" of apples referred to in the Report for 1918 was again sent in for examination on two occasions. The varieties affected were Allington Pippin and Margil.

Weeds and grasses.—The list of weeds identified and reported on during 1919 was practically a replica of that of the previous year. The only noteworthy point in connection with it was that *Lepidium draba* was received for the first time from the North of England. Hitherto all of the specimens sent for examination have come either from the southern or eastern counties. The spread of the weed can be checked to a great extent by spraying early in the season, when it is some three or four inches high, with a two per cent. solution of copper sulphate. This treatment usually prevents the plants from flowering and seeding but it does not kill the underground rhizomes.

More flowering specimens of grasses were identified than usual, and advice was asked as to the advisability of allowing land which had become in one case foul with fiorin or creeping bent, in the other with black bent, to remain down as permanent pasture. The former species is a common constituent of pastures and where not present in excessive quantities it aids in the formation of a close turf owing to its creeping habit. But if one may judge from the quantities left over by grazing stock it is not a species of much value. The latter is an annual weed which, if left down, would probably soon spread all over the arable land in the neighbourhood. Early in the spring several inquiries were made for "prescriptions" of grass seed suitable for the formation of permanent pasture, but since then no further information on the subject has been required.

No definite cases of stock poisoning were reported during the year, but a puzzling case of the death of several ewes whilst feeding on roots was ascribed, without much evidence, to eating quantities of the common chickweed.

Miscellaneous crops. — The costliness of oil-containing feeding stuffs has led to a renewed interest in the cultivation of flax, and several members have made inquiries regarding the best varieties for seed purposes and for information on the disposal of the straw. The reports received since harvest show a yield of some 10—12 cwts. per acre—a yield the growers consider profitable under the present circumstances.

Various market garden crops such as onions, carrots, beet, brussels sprouts and peas, appear to have been grown on a far larger scale as farm crops than usual. Apart from difficulties of marketing the only trouble growers seem to have had have been from attacks of onion mildew.

Two rather unusual crops, chicory and lavender, were also the subjects of an inquiry.

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ANNUAL REPORT FOR 1919 OF THE ZOOLOGIST.

IN the following Report the principal insects which have been inquired about during the year are indicated under the headings of the various farm crops, and notes are given on points of special interest. The outstanding features of 1919 were the great abundance of caterpillars, especially on fruit trees, in the early summer, and the numerous complaints of aphis attack on every kind of farm crop late in the season. In these respects the year was exceptional, though no new pests of great importance were recorded.

Cereals.—The pests reported from cereal crops were much the same as last year, though there was a difference in their relative importance. There were, for instance, more complaints of gout-fly in barley, and fewer of wheat bulb-fly in wheat. Frit-fly in oats appeared rather late. The prolonged winter, delaying the sowing of this crop, rendered bad attacks of frit-fly exceedingly likely, and the few complaints received during June were a matter of surprise. The case was otherwise, however, in July, when much damage was done by it, especially in the North and the Midlands. The histories of the various crops emphasised the already well-established fact that the later oats are sown the more liable they are to this attack. Though primarily an oat pest, the frit-fly has for years past done considerable damage to winter wheat in some districts, and the source of the attack in such cases has been a puzzle to entomologists, for the fly is very unlikely to be about so late in the season as the first appearance of the wheat. It is suspected that the rye-grass preceding the wheat is responsible. At the University farm at Cambridge in October, 1919, Mr. Petherbridge succeeded in finding frit-fly grubs in rye-grass about to be ploughed up for wheat. Experiments are in progress to determine whether a bastard fallow after clover and rye-grass removes the danger of frit-fly attack from the ensuing wheat crop.

The comparative absence of complaints about wheat bulb-fly was quite in accordance with expectation, for, as noted in the Report of the Zoologist for 1918, it had been observed that unfavourable weather interfered with the development of the fly, and that, though the larvæ were numerous and destructive, comparatively few adult flies were seen.

Slugs did an unusual amount of harm to winter wheat, and wireworm and leather-jacket took their customary toll of wheat and oats. It was rather remarkable that wireworm was in some cases very troublesome on land which had been broken up in 1917 but which had furnished good crops in 1918. No very favourable reports were received as to the action of various insecticides alleged to be effective against this pest. In a bad attack of leather-jacket on oats in the north of England following a three-years' wild white clover ley, Mr. Harper Gray found that the varieties "Black Bell" and "Great Mogul" suffered comparatively little.

I have not this year received any complaints of the barley flea-beetle (*Phyllotreta vittula*) noticed in the Report for 1918, nor has another corn pest, the larva of a beetle (*Lema melanopa*), which some entomologists have recorded as injurious in the Midlands, come under my observation.

Grass.—The antler moth, so troublesome on high pastures in some districts last year and the year before, made no reappearance in 1919. As was observed in the Report for 1918, this is quite in accord with the past behaviour of this very erratic pest, and it was pointed out that its recurrence in the same districts during the present year was extremely unlikely. As a matter of fact an entomologist who searched for the insect in a place where it was highly injurious in 1918 was unable to find a single caterpillar. It is only occasionally that it occurs anywhere in sufficient numbers to be a serious pest, and it has never been known to visit the same district in two consecutive years. It is therefore quite out of the question to attempt any measures of prevention in a given locality after a bad attack, for without such measures its early recurrence is in the highest degree unlikely. The only thing to do is to fight it vigorously when it does occur, using all the means at hand, and acting at the earliest possible moment. It always begins on high pastures at an altitude of not less than 750 feet, and the chief object is to circumscribe its action and prevent it from descending upon the lower and richer grass lands.

The only case of injury to grass land referred to me this year was on a southern racecourse, where about two acres were badly damaged by what was thought to be leather-jacket. The culprits proved, however, to be cockchafer grubs.

Potatoes.—The most serious potato pests are of course fungoid, and do not concern this department, but certain animal pests have done minor injury to this crop. Like most other plants this year they have suffered from aphis. A few cases of infestation by the root-knot eelworm (*Heterodera schachtii*) have been reported, and considerable loss from wireworm attack has occurred.

In Wales and in the Midlands a stem-boring surface caterpillar has of late years been increasingly troublesome. The name of the moth to which it belongs is *Hydrœcia micacea*.

Pulse.—The black aphis on beans was in many localities exceedingly destructive this year, but correspondents have called attention to the erratic nature of its incidence. Though on the whole more abundant than usual, its comparative absence from some districts was noted. One correspondent reported that he had one field of beans practically ruined and another badly attacked on one side but fairly free from aphis on the other, while the beans on a neighbouring estate escaped altogether. On inquiry it appeared that the neighbouring immune beans were on the side on which his own were least attacked. What had doubtless happened was that a swarm of winged aphides had been brought to his crops by the wind and had exhausted itself on reaching the second field of beans. In certain conditions of the atmosphere such "blights" or migrations of myriads of aphides are often observed, and the wayfarer finds his clothes covered by them.

The question was also asked as to whether winter beans were more immune than the spring-sown crops. They appear to be just as liable to attack, but it is quite likely that they would suffer less on account of their more forward condition, the soft young growths being naturally most subject to injury by insects.

Sitones weevils did some harm both to peas and beans, but were nothing like so injurious as they proved two years ago. Pea thrips, which was little complained of last year, was again conspicuous this summer, and did considerable harm. A few cases of pea midge and pea moth were referred to me, and also of *Bruchus* beetles in stored beans.

Roots and Garden Vegetables.—Complaints of almost all the recognised pests of these plants were received from one quarter or another, but except, perhaps, for aphis, the attacks were mostly local. The reports as to turnip-fly were extraordinarily diverse. In some districts it was less in evidence than usual, while in others it was particularly destructive. Garden and allotment vegetables seemed to suffer most.

Turnips suffered from surface caterpillars and wireworm, and the turnip-seed beetle was also complained of. The mangold pests were numerous, and some of them did much harm. At an early stage the pigmy beetle occurred in some places, and later it was this root crop which was most severely attacked by aphis. Generally it was the bean-aphis (*A. rumicis*) which smothered the mangold leaves, but in one of the worst cases it appeared to be *A. atriplicis*, which naturally feeds on the common orache, and which often affects plants of the mangold and beet tribe. As in a case recorded by Theobald some years ago, the mangold leaves were crowded by dead specimens of the winged aphis, which seemed to have succumbed to some fungus.

It was in connection with mangolds, too, that millipede attacks were generally reported. The chief cabbage pests were root-fly maggot, gall weevil, and the larvæ of the cabbage butterflies and the cabbage moth. Slugs, too, were more abundant than usual on these plants. The particular caterpillar most troublesome varied in the most arbitrary manner from locality to locality, but on the whole there seemed to me to be more of the large white than usual, while this year I did not come across any caterpillars of the moth *Pionea forficalis* which I mentioned in last year's Report as being particularly noticeable in 1918. The prevalent aphis attacks extended also to plants of the brassica tribe.

There were several complaints of carrot-fly, both on carrots and parsnip. Onion-fly was very destructive in some localities. In connection with this pest an observation by Mr. Roebuck is worth testing. He finds that if parsley is sown with the onion seed and continuously thinned out during the growing season the onions escape the fly.

Other vegetable pests noted were asparagus beetle, celery-fly, and of course, wireworm and surface caterpillars.

Fruit.—The list of insects complained of as injuring fruit crops in 1919 is a particularly long one. Every kind of caterpillar, from the large leaf-eating larva of the "eyed hawk" (*Smerinthus ocellatus*) and the wood boring larva of the leopard moth, to the small caterpillars of the particularly abundant Tortrix moths was met with.

Multitudes of winter moths were caught on the bands fixed to the trees in 1918, and unbanded orchards where the moth was present suffered badly in 1919. Mr. Theobald found that in some Kent orchards the place of the winter-moth was taken, as regards damage, by an allied species, *Eupithecia rectangulata* —one of the moths commonly known as "pugs," but entirely differing from the winter-moth in habit inasmuch as its female can fly.

Various experiences during the past year make it desirable that something should be said in this Report with regard to the banding of trees. This expedient is only of use against those moths whose females are practically wingless and have to crawl up the trunks to lay their eggs on the shoots. These are especially the winter-moth (*Cheimatobia brumata*), the March-moth (*Anisopteryx aescularia*), and the "mottled umber" (*Hybernia defoliaria*). If none of these are present in an orchard, or only present to a very slight extent, banding is of no use. A case recently came under my notice where banding was being practised though there was no sign of winter-moth, and the particular pest in view was the codlin moth, against which sticky-banding is without effect. Of course, in many orchards the winter-moth remains the chief pest and banding cannot safely be discontinued, but there are many cases where the caterpillars of moths with wingless females are comparatively few in number, and arsenic spraying in the spring is very much more effective than banding in the autumn. Here, as always, it is most important to find out precisely what pests are present, and to take measures accordingly. The large fruit-growers are, of course, fully aware of this, but in the smaller fruit gardens and farm orchards money is often spent in inappropriate treatment.

One of the outstanding features of this year's fruit pests was the sudden appearance, in various isolated localities, of huge numbers of the familiar lackey moth caterpillars, so as to constitute a veritable plague, as alarming as that of the grass moth in recent years. Every common insect is liable to these fluctuations. Seasons now and then occur especially favourable to the development of the pest and unfavourable to the insects or birds which normally keep it under control, and it suddenly appears in unwonted abundance, with little or no warning of its approach. In such cases nothing remains but to assemble all hands to fight it with every means available, and especially to prevent it spreading from the centre of attack.

The lackey moth is not at all confined to orchards, but will eat the leaves of many kinds of tree. In some instances this summer the main occurrence of the caterpillars was not on fruit trees but on various broad-leafed trees such as oak and hawthorn, from which it migrated to the orchards, and one of the most successful measures against it was the banding of the trees not yet attacked, to intercept the caterpillars swarming towards them from trees already defoliated. Luckily the gregarious habits of these caterpillars make them easier of destruction than is the case with most pests. They make web-nests in which they congregate by night and in wet weather, and it is generally possible to remove and destroy whole broods in such of the nests as are within reach. The same is true of the small Ermine moth, which was also highly destructive in the south of England last June.

The most disastrous lackey moth attack was in the Sittingbourne district, where 1,000 acres were involved. Minor attacks were reported from many parts of the country, including Northumberland and Lancashire, where, however, there was evidence of it having been imported on nursery stock. The eggs are deposited in a neat ring-like fashion round the twigs, and it should not be difficult to detect them on young stock.

Capsid bugs, apple sucker, apple blossom weevil, and red spider occurred sporadically, but later in the summer aphis attacks were almost universal, and in some cases highly destructive. I saw some young apple trees so severely infested that not only the leaves but the smaller shoots were killed. It was rather noticeable, however, that there were fewer complaints of cherry aphis than in some years.

Among the ordinary fruit pests notified from one locality or another were pear-midge, pear leaf blister mite, raspberry beetle, gooseberry saw-fly and strawberry weevil.

Forest pests.—There have been several inquiries for forest insects, though in most cases no great amount of harm was done. The oak tortrix was again very plentiful in some districts, and again it was noticeable that the pedunculate variety suffered most. The attacks were, perhaps, not so severe as in the two preceding years, but they were distinctly bad in certain localities.

In one case the insect attacking some oak trees proved to be the large longicorn *Prionus coriarius*, a somewhat rare insect, only found in the south of England.

Among the other insects complained of as injurious to broad-leafed trees were willow-beetle, beech-coccus and elm bark-beetle.

The coniferous pests were all well-known insects, and included pine weevil, larch-bug, wood-wasps and pine saw-fly. Of the last-named both species were reported—the common *Lophyrus pini*, and the less well known *L. rufus*. The wood-wasps (*Sirex gigas*) sent by one member for identification afforded a remarkable example of the variation in size in this species. Of two males emerging from the same piece of pine-wood one was precisely twice the length of the other.

MISCELLANEOUS NOTES.

Among the minor garden pests often brought to my notice are "wood-lice" or "slaters." These creatures certainly are capable of doing considerable harm in a garden or in greenhouses and frames, but it is hard to regard them as serious pests because their presence depends on the nature of the locality rather than on the plants which happen to be growing there. If they are especially abundant there is sure to be near at hand some spot particularly favourable to their development, and they will continue to give trouble until this breeding ground is attended to. In a case this season the wood-lice which were doing much harm in a garden were traced to a rockery. What they require is moisture, abundance of shelter and decaying wood, and where these conditions are present they will breed in immense numbers and invade neighbouring flower beds and cucumber frames. They are easily trapped by providing them with slates to shelter under on well-watered ground, but this makes little impression on their numbers as long as their breeding places are left undisturbed.

Household insects, infesting stored goods and furniture, are often referred to this Department for identification and advice as to their treatment, and occasionally cases of considerable interest arise. This autumn a correspondent sent me two kinds of insect alleged to be injuring some framed and glazed photographs, and to be swarming on the mountings behind the glass. One was a species of thrips—often found in such situations, where, if not merely seeking shelter, it possibly finds some nourishment, either in fungoid growths due to dampness, or perhaps in the paste used in mounting. The other was more difficult to account for, since it was a parasitic chalcid fly—*Pteromalus deplanatus.*

Of late years several cases have been recorded of incredible numbers of this insect invading certain buildings—and even particular rooms—in various parts of the country. They are parasitic on some insect, but what this is is uncertain. It has been suggested that their "host" is the larva of the boring beetle *Anobium*, and that the rooms they occur in so abundantly are infested by that pest, but this explanation is manifestly impossible. There is often no sign of the beetle in the rooms where the fly appears, and they would have to be present in prodigious numbers to account for such a host of parasites. Moreover, there is abundant evidence that the flies do not originate in the rooms, but invade them through the windows, apparently seeking shelter. It has been conjectured that one of their "hosts" is the caterpillar of the oak tortrix, and if this should prove the case it would certainly explain their great abundance during the last few years. It is very extraordinary that in their search for shelter they should even have penetrated behind the glasses of the mounted photographs.

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FIELD EXPERIMENTS, 1919.

The season 1918-19 could in no way be called a good one agriculturally. More or less continued wet in the late autumn and early winter months made the sowing time for wheat and for getting the land ploughed an unfavourable one. At Woburn, fortunately, thanks to the light character of the land and to the fact that a tractor had been hired, we were able to get on. From harvest time (1918) to the end of the year there was a good deal of rain, more especially in December, on 27 of the days of which rain in measurable quantity fell. January, 1919, was even wetter, with snow towards the close; then followed a cold and frosty February, the temperature at one time going as low as -3°F. March was once more very wet and cold and April nearly as bad, so that, when May opened with a few bright dry days a very late spring had been experienced and the land "set" very hard. Drought then commenced and continued throughout June, causing corn to be backward and the hay crop very short. Had it not been for a few showers towards the end of June sowing of swedes would have been impossible. As it was, the mangold crop sown earlier never had a fair chance, and was practically a failure. The early part of July was fine and enabled the hay crop to be got in, while rain towards the end of the month gave the swedes a further impetus. The early part of August was very hot and helped towards the ripening of the corn crops, but unsettled weather towards the close of the month delayed harvest operations, which, however, were improved by a more favourable September, this allowing of their being brought to a close. The late spring followed by dry weather and, indeed, drought in May and June, was mainly responsible for a poor corn yield, both of autumn and spring-sown crops, for a hay crop that barely reached 1 ton per acre, and for considerable difficulties with root crops, including potatoes.

The total rainfall for the season was 27·53 inches with 197 rainy days, as against a rainfall of 26·57 inches and 177 rainy days in 1917-8.

CONTINUOUS GROWING OF WHEAT (*STACKYARD FIELD*) 1919 (43RD SEASON).

The principal operations carried out were as follows :—

1918, Oct. 4-10—Land ploughed.

„ Oct. 8—Farmyard manure given to plot 11b. This contained ·692 per cent. of nitrogen, so that 5 tons 6 cwt. 1 qr. per acre were applied in order to give 100 lb. of ammonia.

„ Oct. 24—"Little Joss," 10 pecks per acre drilled (after dressing with sulphate of copper).

„ Oct. 24—Mineral manures sown (plots 4, 5a and b, 6, 8a and b, 8aa and 8bb, 9a and b, 10a and 11a).

1919, May 15—Rape dust put on plot 10b. This contained 4·80 per cent. of nitrogen, so that 429 lb. were required per acre, to supply 25 lb. of ammonia.

„ May 15—First top-dressings of sulphate of ammonia and nitrate of soda applied (plots 2a, 2aa, 2b, 2bb, 3a, 3b, 5a, 5b, 6, 8a, 8aa, 9a, 10a and 11a).

„ May 28—Second top-dressings applied (plots 3a, 8a, 8aa and 9a).

„ Aug. 18—Wheat crop cut.

„ Sept. 1—Crop carted and stacked.

„ Dec. 17—Wheat threshed.

1920, Jan. 6—Wheat dressed and weighed.

The chief features of the growing period were the marked effect of the nitrogenous top-dressings in July, the small amount of residue, after such a wet autumn, from the previous season's application of these, and also the marked benefit from lime.

The harvest results are given in Table I, page 422.

The wheat crop, as was to be expected after such an unfavourable season, was a poor-yielding one, though in the field it looked fairly well. The unmanured produce was only 7·5 bushels of corn with 7 cwt. of straw per acre, a result little more than half the corresponding crop of 1918.

The highest yield was that of the farmyard manure plot (11b), this being 22 bushels of corn, with 1 ton of straw, per acre, no other plot of the whole series at all approaching this.

Mineral manures alone (plot 4) gave an increase of 2·2 bushels of corn per acre.

The results from the use of nitrate of soda were, all round, better than those from sulphate of ammonia, and the addition of minerals to sulphate of ammonia did but little good as compared with that of lime. The plot 2b, where lime was put on once only, as far back as 1897, still continues to show the benefit, though plot 2bb (2 tons lime per acre repeated in 1905) gave, this season, a marked increase of 5·4 bushels, which was not the case in 1918. The repetition, in 1918, of 10 cwt. per acre of lime (plots 8aa, 8bb) has produced nearly an equal benefit, as has also the 1 ton of lime per acre on plot 5b.

Nitrate of soda used by itself did no better with the double dressing than the single one (plots 3a, 3b), but the produce was considerably increased by the use of mineral manures (plots 6, 9a).

As between the use of phosphates and of potash (plots 10a, 11a) there was not a marked difference, the balance being in favour of the phosphates.

Rape dust did not give much more than half the crop that farmyard manure did, but this was due largely to the late time of putting the rape dust on, and to the unfavourable season. It is intended in future to apply rape dust in the autumn.

Farmyard manure, as stated, gave much the highest crop of all the plots, and the most straw.

Owing to difficulty in obtaining a "thresher," the crop could not be threshed until just before Christmas, and it was subsequently dressed, weighed and valued. Speaking generally, the corn was in good condition and up to the year's average for wheat of the midland counties, so that it would have fetched about the standard price of 76*s.* 6*d.* per quarter.

CONTINUOUS GROWING OF BARLEY (*STACKYARD FIELD*), 1919 (43RD SEASON).

The principal field operations were :—

1919, March 26.—Farmyard manure applied to plot 11b 6 tons 13 cwt. 0 qrs. 8lbs. per acre, in order to give 100 lbs. ammonia per acre—the manure containing ·553 per cent. of nitrogen.

1919, April 19.—Chevalier barley—9 pecks per acre—drilled, mineral manures being applied the same day to plots 4a, 4b, 5a, 5aa, 5b, 6, 8a, 8aa, 8b, 8bb, 9a, 9b, 10a, 11a.
„ May 15.—Rape dust applied to plot 10b—429 lbs. per acre (contained 4·80 per cent. nitrogen). First top-dressings of sulphate of ammonia and nitrate of soda applied to plots 2a, 2aa, 2b, 2bb, 3a, 3b, 5a, 5aa, 5b, 6, 8a, 8aa, 9a, 10a, and 11a.
„ May 28.—Second top-dressings of nitrogenous salts put on (plots 3a, 8a, 8aa, and 9a).
„ Sept. 9.—Barley cut.
„ Sept. 16.— „ carted and stacked.
„ Dec. 17.— „ threshed.
1920, Jan. 8.— „ dressed and weighed.

The harvest results are given in Table II., page 423.

The unmanured yield was 11·8 bushels of corn per acre, with 7 cwt. 1 qr. of straw per acre, and this was 3 bushels per acre better than in the previous unfavourable season of 1918, though inferior to the crop of 1917.

Mineral manures alone (plots 4a, 4b) gave an increase of 2·2 bushels per acre without lime, and one of 6·1 bushels per acre where lime had been given as well in 1915. Accordingly, in three of the four years since lime was put on, there has been an increased benefit from its use.

Sulphate of ammonia used alone (plot 2a) or with minerals only (plots 5a, 8a) gave little or no crop, but in all cases of the addition of lime a crop was obtained, this, on plot 5aa (minerals, sulphate of ammonia and lime), being 6·5 bushels per acre above the unmanured produce. The double dressing of sulphate of ammonia, with the same amount of lime and minerals (plot 8bb) gave a somewhat lower yield than the single dressing.

Nitrate of soda (plots 3a, 3b), as in 1918, gave a less crop than the untreated one, even when the heavier application was made, and this lends ground to the belief that these plots are gradually failing, just as the sulphate of ammonia ones did. The addition of mineral manures (plot 6) showed, however, a marked benefit, the increase being 8 bushels per acre above the unmanured. With the double amount of nitrate of soda (plot 9a) the increase went up to 12 bushels per acre, this plot providing the third highest crop of the series.

The second highest crop (26·5 bushels per acre) was on plot 11a where nitrate of soda was used with sulphate of potash, the use of the latter having given 8 bushels more per acre than superphosphate with sulphate of potash omitted (plot 10a).

TABLE I.—*Continuous Growing of Wheat*, 1919 (*43rd Season*).

(Wheat grown year after year on the same land, the manures being applied every year.)

Stackyard Field—Produce per acre.

Plot	Manures per acre	Head corn		Tail corn	Straw, chaff, &c.
		No. of bush.	Weight per bushel	Weight	
			Lb.	Lb.	C. q. lb.
1	Unmanured	6·8	61·5	5	7 2 11
2a	Sulphate of ammonia (=25 lb. ammonia)	—	—	4	2 0 18
2aa	As 2a, with 5 cwt. lime, Jan., 1905, repeated 1909, 1910 and 1911 . .	6·8	63·0	8	8 2 7
2b	As 2a, with 2 tons lime, Dec., 1897 .	5·7	63·0	4	5 2 9
2bb	As 2b, with 2 tons lime (repeated), Jan., 1905	11·1	64·0	8	9 1 3
3a	Nitrate of soda (=50 lb. ammonia) .	13·8	61·5	20	12 2 0
3b	Nitrate of soda (=25 lb. ammonia) .	13·9	60·5	16	11 3 1
4	Mineral manures (superphosphate, 3 cwt.; sulphate of potash, ½ cwt.) .	9·7	61·0	9	9 3 16
5a	Mineral manures and sulphate of ammonia (=25 lb. ammonia) . .	7·8	63·0	4	7 1 0
5b	As 5a, with 1 ton lime, Jan., 1905 .	11·5	62·5	8	9 2 5
6	Mineral manures and nitrate of soda (=25 lb. ammonia).	15·4	61·2	10	11 0 19
7	Unmanured	8·1	60·6	7	6 3 21
8a	Mineral manures and (in alternate years) sulphate of ammonia (=50 lb. ammonia)	2·3	62·0	4	3 2 19
8aa	As 8a, with 10 cwt. lime, Jan., 1905, repeated Jan., 1918 . . .	9·6	61·0	12	10 1 20
8b	Mineral manures, sulphate of ammonia (=50 lb. ammonia) omitted (in alternate years)	5·7	60·0	8	5 0 24
8bb	As 8b, with 10 cwt. lime, Jan., 1905, repeated Jan., 1918	10·4	62·0	12	7 0 6
9a	Mineral manures and (in alternate years) nitrate of soda (=50 lb. ammonia)	16·3	61·9	16	15 0 9
9b	Mineral manures, nitrate of soda (=50 lb. ammonia) omitted (in alternate years)	11·0	60·5	12	9 0 19
10a	Superphosphate 3 cwt., nitrate of soda (=25 lb. ammonia)	13·7	60·0	12	12 1 2
10b	Rape dust (=25 lb. ammonia) . .	11·2	59·3	12	11 0 0
11a	Sulphate of potash 1 cwt., nitrate of soda (=25 lb. ammonia) . .	12·1	60·5	12	10 2 25
11b	Farmyard manure (=100 lb. ammonia)	22·0	60·1	18	20 0 24

TABLE II.—*Continuous Growing of Barley*, 1919 (*43rd Season*).

(Barley grown year after year on the same land, the manures being applied every year.)

Stackyard Field—Produce per acre.

Plot	Manures per acre	Head corn		Tail corn	Straw, chaff, &c.		
		No. of bush.	Weight per bush.	Weight			
			Lb.	Lb.	C.	q.	lb.
1	Unmanured	12·4	49·7	33	7	1	4
2a	Sulphate of ammonia (=25 lb. ammonia)	2·4	48·0	12	2	0	22
2aa	As 2a, with 5 cwt. lime, Mar., 1905, repeated 1909, 1910 and 1912 . .	6·8	48·0	28	6	1	6
2b	As 2a, with 2 tons lime, Dec., 1897, repeated 1912	7·3	49·0	24	5	1	4
2bb	As 2a, with 2 tons lime, Dec., 1897, repeated Mar., 1905 . . .	6·6	48·0	24	6	2	9
3a	Nitrate of soda (=50 lb. ammonia) .	10·9	48·5	36	7	0	26
3b	Nitrate of soda (=25 lb. ammonia) .	10·1	48·0	42	6	0	4
4a	Mineral manures[1]	14·0	50·0	34	7	0	10
4b	As 4a, with 1 ton lime, 1915 . .	17·9	51·1	48	8	3	12
5a	Mineral manures and sulphate of ammonia (=25 lb. ammonia) . . .	9·4	50·5	28	5	3	1
5aa	As 5a, with 1 ton lime, Mar., 1905, repeated 1916	18·3	50·5	56	13	0	7
5b	As 5a, with 2 tons lime, Dec., 1897, repeated 1912	13·5	50·0	36	7	3	15
6	Mineral manures and nitrate of soda (=25 lb. ammonia)	19·7	49·4	36	11	0	2
7	Unmanured	11·2	49·7	27	7	0	16
8a	Mineral manures and (in alternate years) sulphate of ammonia (=50 lb. ammonia)	2·5	52·0	8	1	2	25
8aa	As 8a, with 2 tons lime, Dec., 1897, repeated 1912	17·5	50·7	52	10	3	5
8b	Mineral manures, sulphate of ammonia (=50 lb. ammonia) omitted (in alternate years)	2·6	50·0	8	1	2	1
8bb	As 8b, with 2 tons lime, Dec., 1897, repeated 1912	13·3	50·0	20	5	3	25
9a	Mineral manures and (in alternate years) nitrate of soda (=50 lb. ammonia)	24·0	49·6	48	12	3	21
9b	Mineral manures, nitrate of soda (= 50 lb. ammonia) omitted (in alternate years)	12·0	51·5	54	7	1	6
10a	Superphosphate 3 cwt., nitrate of soda (=25 lb. ammonia) . . .	18·3	50·0	48	11	3	2
10b	Rape dust (=25 lb. ammonia) . . .	11·7	50·0	56	7	3	6
11a	Sulphate of potash 1 cwt., nitrate of soda (=25 lb. ammonia) . . .	26·5	50·2	63	14	2	11
11b	Farmyard manure (=100 lb. ammonia)	28·3	51·3	57	15	0	22

[1] Superphosphate 3 cwt., sulphate of potash ½ cwt.

As with the wheat, farmyard manure (plot 11b) produced the largest crop, viz. 28·3 bushels per acre, rape dust (plot 10b) failing to benefit, though this was probably due to its late application.

As regards quality, the corn was bad, being immature and unsound through unfavourable weather. On a basis of 115*s.* per quarter as an average, the best sample (from plot 4b, minerals and lime) might have fetched 105*s.* per quarter, but for most of the other lots not above 95*s.* per quarter would have been given, while the worst ones would not have reached 90*s.*

ROTATION EXPERIMENTS.—THE UNEXHAUSTED MANURIAL VALUE OF CAKE AND CORN (*STACKYARD FIELD*).

Series C. 1919, *Barley*, *after Swedes fed on.*

The swede crop of 1918 came to only about 11 tons per acre, and this amount was fed off—from February 13, 1919, to March 27, 1919—with sheep receiving, on plot 1, corn (barley and oats), and on plot 2 linseed cake and cotton cake. On either plot the quantity consumed—of corn or mixed cake—was 4 cwt. to the acre. A little clover hay-chaff was given as well. The land was ploughed after the sheep and Chevalier barley was drilled on April 11, at the rate of 9 pecks per acre. A poor crop, as with the continuous plot, was the result. Red clover—12 lb. per acre—was drilled in the barley on May 26. The barley crop was cut on September 2, carted and stacked on September 12, threshed on September 17, and dressed and weighed on January 6, 1920.

The results are given in Table III.

TABLE III.—*Rotation Experiment—the Unexhausted Manurial Value of Cake and Corn. Series C* (*Stackyard Field*) 1919—*Barley after Swedes fed on.*

Produce per acre.

Plot		Head corn			Tail corn	Straw, chaff, &c.
		Weight	Bush.	Weight per bush.	Weight	
		Lb.		Lb.	Lb.	C. q. lb.
1	Corn-fed Plot	915	17·4	52·6	216	12 0 14
2	Cake-fed Plot	955	18·2	52·4	200	12 0 16

The difference between the two plots was less than 1 bushel per acre, with a slight advantage to the cake-fed plot. The straw was the same on the two plots within a couple of pounds.

The result, accordingly, was much as in former years. The corn was badly smutted, and the value of it was not put above 90*s*. per quarter on a basis of 115*s*.

Series D. 1919, *Red Clover, after Barley.*

During the autumn of 1918 the red clover, which had been sown in a barley crop, was "touched up" with fresh seed and it grew fairly, giving the first crop—cut as hay—on June 17, this being carted on June 23. The clover-hay crop, owing to the drought, was only a poor one, and less than 1 ton per acre; moreover, it contained a good deal of weed. The second cutting, however, was much better. This was cut on August 18, and carted on August 27, the weight being rather over a ton per acre and much freer from weed than the first crop. The difference between the two plots, as given in Table IV. was immaterial, and, possibly, misleading, owing to the quantity of weed in the first crop.

TABLE IV.—*Rotation Experiment—the Unexhausted Manurial Value of Cake and Corn, Series D (Stackyard Field), 1919, Red Clover.*

Produce of Clover Hay per acre.

Plot		1st crop	2nd crop	Total
		T. c. q. lb.	T c. q. lb.	T. c. q. lb.
1	Corn-fed plot .	0 18 3 10	1 1 1 3	2 0 0 13
2	Cake-fed plot . .	0 16 3 3	1 2 2 18	1 19 1 21

GREEN-MANURING EXPERIMENTS.

(*a*) *Stackyard Field. Series A.*

1919 was the year for the green crops, to be fed off by sheep. The land was ploughed in April and early May. Tares, at the rate of 2 bushels per acre, were drilled on May 21, and, on June 4, rape, 5 lb. per acre, and mustard, 1 peck per acre. All three sets of green crops came up capitally, and it is some years since such good ones have been grown on this land. The tares in particular were excellent. Sheep were put on the plots on August 11, and, beginning with the mustard, they passed in succession on to the rape and then the tares, feeding off each crop with 1½ cwt. of cotton cake per acre. The sheep finished on September 15. The land was then ploughed and wheat drilled.

(*b*) *Lansome Field.*

It having been determined to give the land a thorough cleaning before entering on a fresh series of experiments, the year was devoted to this, the land being fallowed. It was ploughed several times and the weed removed as far as possible.

EXPERIMENTS WITH NITROGENOUS TOP-DRESSINGS (*ROAD PIECE FIELD*), 1919.

It was intended to carry on, simultaneously with others at the pot-culture station, experiments with different top-dressings for barley. The barley, 9 pecks per acre, was drilled in Road Piece field on April 8 and 9, it following on swedes fed on the land by sheep, so that no further manuring was given at starting. The nitrogenous top-dressings were (*a*) sulphate of ammonia, (*b*) nitrate of soda, (*c*) nitrate of ammonia, (*d*) nitrate of lime, (*e*) nitrolim, and the quantities applied were based on the amount of nitrogen contained in a dressing of 1 cwt. of sulphate of ammonia per acre. These dressings—each supplying a like amount of nitrogen per acre—were applied on June 4. Owing to the dry weather, coupled with the late sowing, the crop was far from a satisfactory one. The straw was extremely short, though the ears developed well and the barley yielded from 31 to 43 bushels of corn per acre. The results, in such a season, however, were not fully comparable, and it would be misleading to give the weights obtained, or to do more than indicate the general line which the experiment took. This latter is given mainly because a similar experiment was carried out simultaneously at the pot-culture station (see page 434) and because the same general indications were there given. These were :—Firstly, that nitrogen applied in the form of nitrate of soda did best, giving a marked increase on the untreated plot; secondly, that the same amount of nitrogen in the form of sulphate of ammonia or of nitrate of ammonia, did next best; thirdly, that in the form of nitrolim (calcium cyanamide) nitrogen was less effective than in any other form.

THE RELATIVE VALUES OF LIME AND CHALK FOR LIMING PURPOSES (*STACKYARD FIELD*), 1919.

For a number of years experiments have been carried on at the pot-culture station on the action of caustic lime and carbonate of lime in neutralising the acidity of an acid soil such as that of plot 2a of the continuous wheat and barley series and on which sulphate of ammonia has been used for a number of years and has rendered the soil (originally very lacking in lime) quite acid. It was noticed in these experiments that the caustic lime and carbonate of lime behaved in some respects very differently, and, accordingly, it was determined to try these experiments on the field scale, in addition to having a duplicate carried out simultaneously at the pot-culture station, and to see how the two forms of lime acted in actual practice. The area selected was in Stackyard Field—one half, comprising 2 acres, of series B being taken. This had previously borne a crop of potatoes (1918) which was manured alike over the whole area with farmyard manure. Twelve plots were set out as follows :—

Plot.	Applications per Acre.	
1	Nothing.	
2	Chalk equivalent in lime (CaO) to	10 cwt. of lime (caustic).
3	" " " "	1 ton " "
4	" " " "	2 tons " "
5	" " " "	3 " " "
6	" " " "	4 " " "
7	Nothing.	
8	Lime (caustic)	10 cwt.
9	"	1 ton.
10	"	2 tons.
11	"	3 "
12	"	4 "

The lime and chalk were commercial supplies, the former being Buxton lump lime and the latter coming fron Dunstable (Beds.) and being ground. The lump lime was spread on January 9, 1919, and allowed to slake down, being subsequently spread about ; the ground chalk was spread on January 13. The land was ploughed at the end of February and early in March, and barley was drilled on April 18. The barley suffered much from wireworm attack (the land had been in "seeds" two years previously), and added to this, was the influence of the dry season, the result being that only a small and inferior crop of barley was obtained. It was not to be expected that the different lime applications would "tell" in the first year, and the crop-weighings showed but small differences. The experiment will be continued over the whole rotation course and should yield interesting results.

LEATHER AS A MANURE (*LANSOME FIELD*), 1919.

As a supplement to some experiments at the Pot-Culture Station, a manurial trial with leather was made upon a swede crop in Lansome Field. The ordinary dressing for the swedes on this field was farmyard manure, 5 cwt. per acre basic slag, and a subsequent top-dressing of sulphate of ammonia. But 3 plots were left without farmyard manure and were treated as follows :—

Plot	
1	Ground leather powder—1 ton per acre.
2	Sulphate of ammonia.
3	Treated leather—1 ton per acre.

The leather powder was natural leather very finely powdered ; the treated leather had been acted upon by sulphuric acid with the object of making the nitrogen of the leather soluble. Both were applied previous to the planting of swedes.

The sulphate of ammonia was given as a top-dressing after the roots were singled. It was used in amount to supply the same nitrogen as in the natural leather powder, and was quite a small dressing. This experiment is mentioned for the sake of showing that neither the ground nor the treated leather had any effect on the crop, which was, in each case, markedly inferior to that from the sulphate of ammonia, small as was the amount of the latter applied. Indeed, the inferiority of the leather-dressed plots was clearly indicated in the appearance of the plots, the leather having done no good whatever.

GRASS EXPERIMENTS.

1. *Broad Mead*, 1919.

(*a*) Improvement of Old Pasture.
(*b*) Varieties of Lime.
(*c*) Different Forms of Lime.

Once more, through the shortage of permanent pasture at the Home Farm, Broad Mead had to be hayed, and so a further set of results was available for the above. No further applications were made in any case. The plots were all chain-harrowed in the spring. The grass was cut June 21-28, carted and weighed June 24-30. The results are given in Tables V., VI. and VII.

In (*a*) the unmanured plot gave the lowest yield of hay. Lime showed little increase, and the heaviest crop was, as usual, with farmyard manure. Basic slag and nitrate of potash produced the next best return, and basic slag with sulphate of potash was rather superior to superphosphate with the same.

TABLE V.—*Improvement of Old Pasture* (*Broad Mead*).

Produce of Hay per acre, 1919.

Plot	Manuring per acre in 1913	Weight of hay per acre T.	c.	q.	lb.
1	Basic slag 10 cwt. Nitrate of potash 1 cwt.	1	10	0	0
2	Mineral superphosphate 5 cwt. Sulphate of potash 1 cwt.	1	5	2	0
3	Basic slag 10 cwt. Sulphate of potash 1 cwt.	1	6	1	0
4	No manure	1	1	3	0
5	Lime followed (in 1913) by— Superphosphate 3 cwt. Sulphate of potash 1 cwt.	1	2	1	0
6	Dung 12 tons	1	11	2	0

TABLE VI.—*Varieties of Lime on Grass Land (Broad Mead)*.

Produce of Hay per acre, 1919.

Plot	Lime applied in 1910 and again in 1916[1]	Weight of hay per acre			
		T.	c.	q.	lb.
1	Buxton lime	1	7	3	0
2	Chalk lime	1	6	2	0
3	Magnesian lime	1	5	0	6
4	No lime.	1	4	2	0
5	Lias lime	1	8	0	0
6	Oolite lime	1	7	1	0

[1] Two tons per acre in each case

TABLE VII.—*Different Forms of Lime on Grass Land (Broad Mead)*.

Weights of Hay per acre, in 1919.

Plot	Lime applied, 1913[1]	Weight of hay per acre			
		T.	c.	q.	lb.
1	Lump lime	1	9	0	0
2	Ground lime	1	9	2	0
3	Nothing	1	8	0	0
4	Ground limestone	1	11	2	0
5	Ground chalk	1	13	1	0

[1] 20*s.* per acre (independently of carriage, cartage, &c.), was spent on each plot for the lime used.

In (*b*) the unlimed plot was the poorest; magnesian lime but a shade better; and there was little difference between the rest, lias lime and Buxton lime giving the best returns, though the oolite lime and the chalk were but little inferior.

In (*c*) the unlimed plot was lowest, and ground chalk gave the best result; ground limestone also did well and was superior to either lump or ground lime.

These results were quite on the lines of those of 1918.

2. *Charity Farm—West Brook Field*, 1919.

Plots 1 (always hayed) and 2 (alternately hayed and grazed) were made into hay this year.

The grass was mown July 11-15 and carted July 16 and 17. The results were:—

	Weight of hay per acre.			
	T.	c.	q.	lb.
Plot 1 (always hayed) . . .	1	10	3	0
„ 2 (alternately grazed and hayed)	1	9	2	0

The dry weather accounted for the hay crop being so small.

RAINFALL AT WOBURN EXPERIMENTAL STATION, 1918-19.
(292 ft. above sea level.)

	Total Inches	No. of days with ·01 in. or more recorded		Total Inches	No. of days with ·01 in. or more recorded
1918.			March . .	3·69	21
October . .	1·55	18	April . .	2·57	17
November . .	2·27	18	May . .	0·61	6
December . .	2·32	27	June . .	1·20	10
1919.			July . .	2·77	18
January . .	3·85	21	August .	2·51	12
February . .	2·52	13	September .	1·67	16
			Total . . .	27·53	197

POT-CULTURE EXPERIMENTS, 1919.

1. *The Hills' Experiments—The Influence of Arsenic Compounds upon Wheat.*

Although at the time of the sittings of the Royal Commission on Arsenical Poisoning (1900) experiments with arsenic were carried out at Woburn—the results being given in the Report of that Commission—the question then at issue was the extent to which arsenic was taken up by plants. Nothing was done, however, as to the direct action of arsenic in different forms and amounts upon plant life. It was determined to try this in 1919. The selected compounds were (1) arsenious acid (As_2O_3), (2) arsenic acid ($H_3 As O_4$), (3) and (4) the soda salts of the two, viz. (3) sodium arsenite ($Na As O_2$) and (4) sodium arsenate ($Na_2H As O_4, 7 H_2O$).

As there was nothing in the way of previous guidance to go by, the quantities taken were more or less arbitrary, viz. ·001 per cent., ·005 per cent., ·01 per cent., ·02 per cent., ·05 per cent., and ·10 per cent. of the element arsenic, this being reckoned on the soil after mixing with the arsenic compounds, the mixed soil containing the percentages of arsenic named.

The soil used was from Stackyard Field, the pots were earthenware ones, and each experiment was in duplicate. Wheat was planted on December 30, 1918. Germination was duly noted, and all went well until early in February, 1919, when the extreme cold, for the first time in the history of the Pot-culture Station, killed the wheat and rendered it necessary to make a fresh start with spring wheat. This destruction of plant was not confined to the arsenic experiments but extended to the whole of the winter-sown wheat in pots. For the six days, February 8 to 13, the lowest temperatures reached were :—4°F., 3°F., 2°F, −3°F., 4°F and 0°F. It is noticeable that while the wheat in pots suffered thus, in the field the autumn-sown wheat, protected by a thin covering of snow, experienced no injury. Spring wheat ("Red Marvel") had to be put in on March 20 and the experiment restarted. Our general experience with spring-sown wheat in pot-culture work has not been altogether satisfactory, and occasionally anomalies have been found. These do not, however, seem to have appeared in the present series. Twenty wheat grains were sown in each pot, the plants being later reduced to twelve. As regards germination, there was no failure with any of the arsenious acid plants, but with arsenic acid or the soda salts of either acid there was retardation of germination when ·02 per cent. of arsenic was supplied, and with ·10 per cent. of arsenic in these forms no plants came in one case and only four out of the twenty sown in another. ·10 per cent. of arsenic in soluble form would accordingly seem to inhibit germination entirely. There was little difference shown in the arsenious acid set during growth, and this was borne out by the crop weighings. The appearances presented by selected crops are shown in Plate 1.

With arsenic acid, on the other hand, very marked differences were shown. The principal ones are indicated in Plate 1. There was no falling off of crop up to ·01 per cent. of arsenic, but with ·02 per cent. came a decrease, and with ·05 per cent. or more an entire failure of plant.

Passing to the soda salts, these gave results which followed the lines of the arsenic acid, ·02 per cent. of arsenic in each case causing a diminution of crop and, practically, entire failures with ·05 per cent. or ·10 per cent.

A comparison of e. f. and g. in Plate 1 with the corresponding ones in Plate 2 will show that the toxic action produced is due to the arsenic and not to the soda; also, from the same results being found with the soda salts of arsenic acid as from the acid itself, that the injury done is not due to acidity. It is further clear that it is on the relative solubilities that the differences between arsenious and arsenic acid and their respective soda salts depend, for whereas, as shown by c. and d. in Plate 1, ·05 per cent. and ·10 per cent. of arsenic in the less soluble form of arsenious acid can be used without apparent injury, the same amounts in the more soluble forms of arsenic acid (f. and g. Plate 1) or of the soluble soda salts of the two acids (c. and d. or f. and g. Plate 2) cause entire failure of plant.

The plants, after being photographed, were harvested on August 13, and the results of weighing are set out in Table I. In a few instances there was some indication of a slightly stimulating effect being produced, but the apparent gain was hardly beyond the limits of experimental error. The examination of the roots gave no special information.

The general conclusions come to were :—

1. That the extent to which arsenic can be applied to the wheat plant without injuring it depends upon the solubility or insolubility of the arsenic-containing body.

2. With insoluble forms like arsenious acid, up to ·10 per cent. can be used without any injury being done to germination or crop.

3. With the more soluble compounds, such as arsenic acid or the soda salts of either arsenious or arsenic acid, a decrease of crop takes place when arsenic is used up to ·02 per cent., and, with ·05 per cent. or more, entire failure of crop results.

4. ·05 per cent. of arsenic in soluble form retards germination and ·10 per cent. entirely inhibits it.

5. The limit of safe use would appear to be ·01 per cent. of arsenic. This would represent an application of about 8¼ cwt. of arsenic acid per acre.

TABLE I.—*Arsenic Compounds on Wheat*, 1919.

	Corn	Straw		Corn	Straw
No treatment	100	100	No treatment	100	100
Arsenious acid containing ·001 % As	84·7	90·2	Sodium arsenite containing ·001 % As	102·5	107·2
" " " ·005 "	117·6	106·0	" " " ·005 "	116·1	124·0
" " " ·01 "	91·6	86·9	" " " ·01 "	107·7	101·4
" " " ·02 "	96·6	88·3	" " " ·02 "	79·3	87·3
" " " ·05 "	99·2	76·1	" " " ·05 "	—	11·2
" " " ·10 "	98·1	71·8	" " " ·10 "	—	—
Arsenic acid " ·001 "	89·2	92·6	Sodium arsenate " ·001 "	103·1	105·1
" " " ·005 "	102·0	102·3	" " " ·005 "	95·4	86·5
" " " ·01 "	120·4	93·3	" " " ·01 "	101·0	88·3
" " " ·02 "	82·6	77·2	" " " ·02 "	67·0	58·4
" " " ·05 "	—	6·9	" " " ·05 "	—	7·1
" " " ·10 "	—	—	" " " ·10 "	—	—

II. *The Relative Effects of Lime and Chalk.*

As mentioned on page 426 experiments have been carried out for several years at the Pot-culture station with the object of seeing whether lime and chalk work similarly, and chiefly in relation to the question of the neutralising of soil acidity by one or the other. The results have led to some rather unexpected conclusions, and it was considered desirable to test these practically in the field. With this view the experiment recorded on pages 426 and 427 was initiated. At the same time a duplicate of the field experiment, but by pot-culture methods, was determined on, and it was thought likely that the results would be more immediate than in the field, as, indeed, proved to be the case.

The soil used was that of Stackyard Field and taken from the headland just outside the field plots on this subject. This soil contained lime ·205 per cent., magnesia ·124 per cent., and

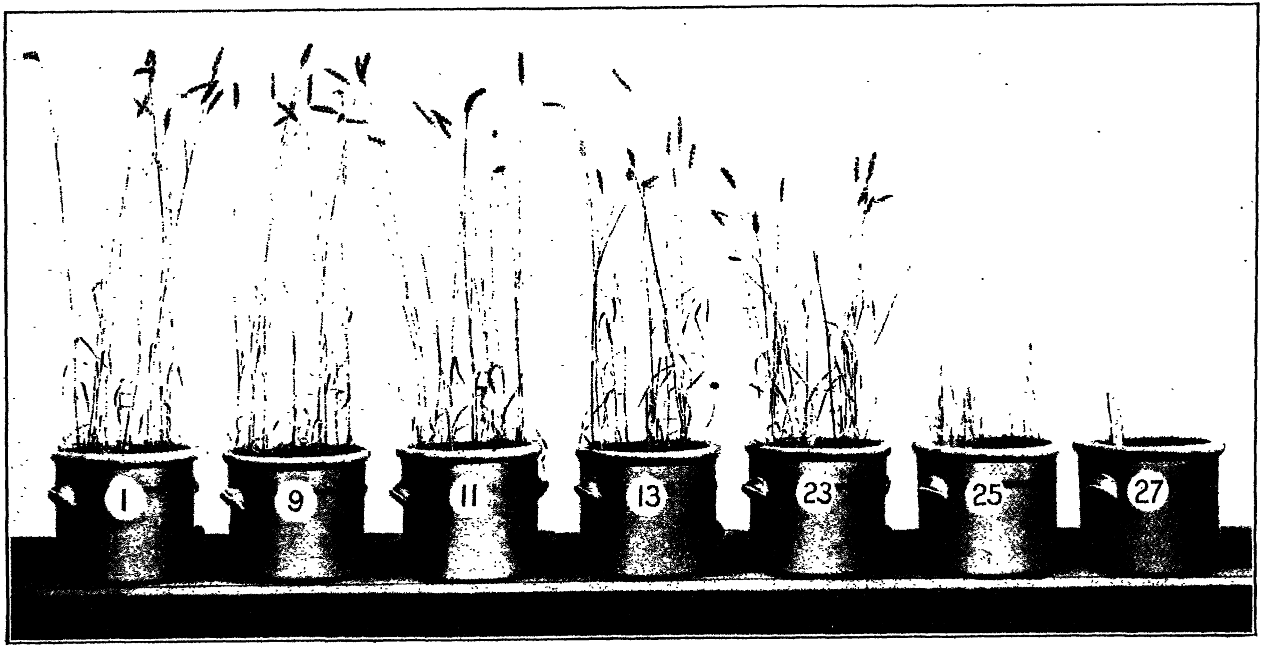

PLATE 1.—The influence of Arsenic compounds on Wheat. 1919.

(a) untreated; (b) ·02 per cent.; (c) ·05 per cent.; (d) ·10 per cent. of Arsenic as Arsenious acid; (e) ·02 per cent; (f) ·05 per cent.; (g) ·10 per cent. of Arsenic as Arsenic Acid.

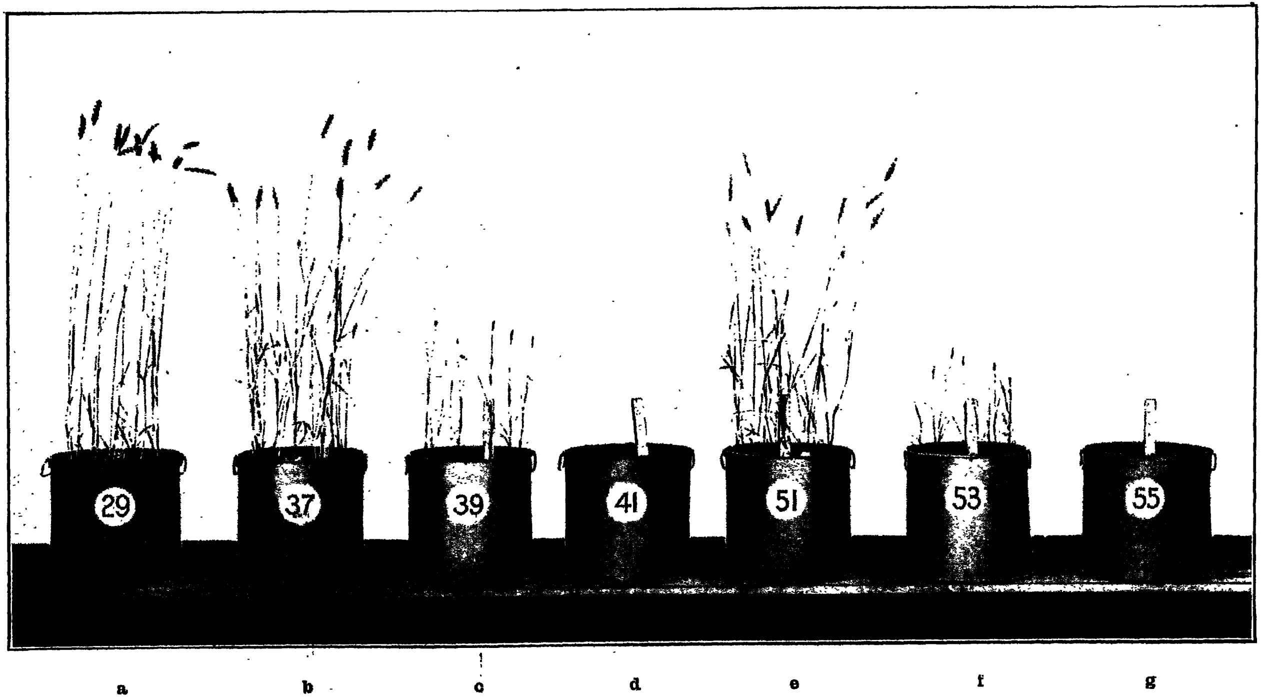

Plate 2.—The influence of Arsenic compounds on Wheat. 1919.

(a) untreated; (b) ·02 per cent.; (c) ·05 per cent.; (d) ·10 per cent. of Arsenic as Sodium Arsenite; (e) ·02 per cent.; (f) 05 per cent (g) ·10 per cent. of Arsenic as Sodium Arsenate

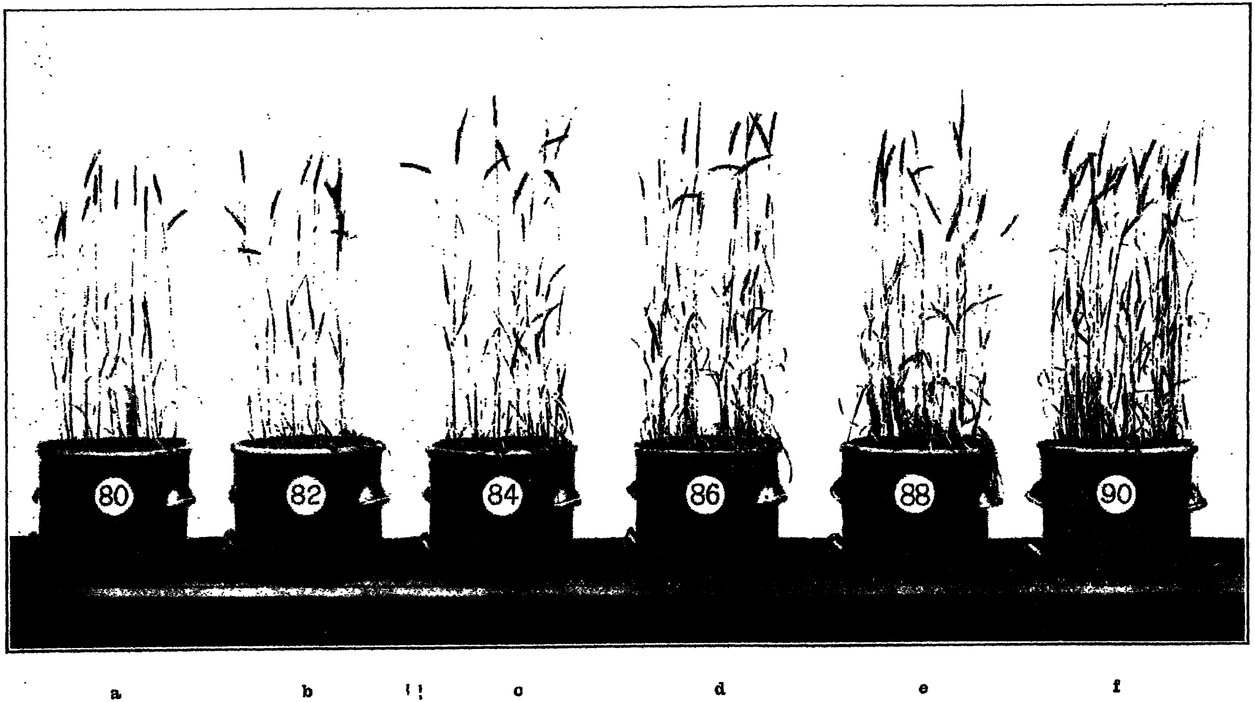

Plate 3.—Lime and Carbonate of Lime compared, on Stackyard Field Soil. 1919.

(a) untreated; (b) 10 cwt. per acre; (c) 1 ton per acre; (d) 2 tons per acre; (e) 3 tons per acre; (f) 4 tons per acre, of Lime applied as Caustic Lime

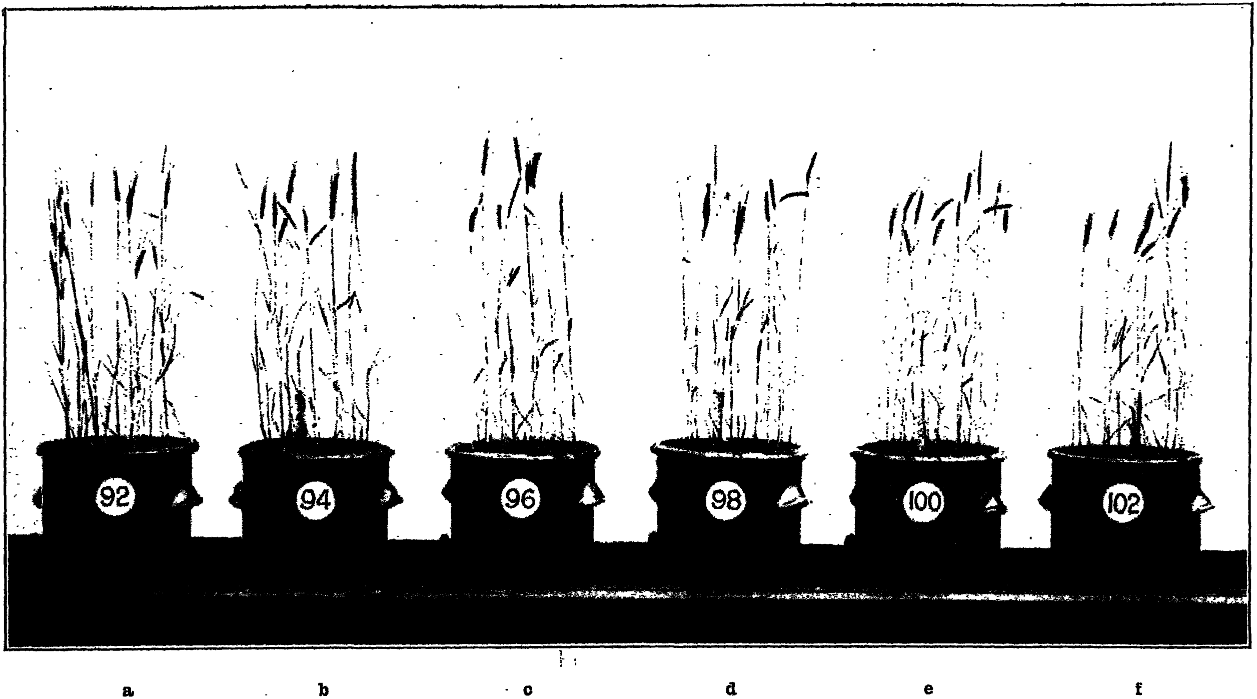

Plate 4.—Lime and Carbonate of Lime compared, on Stackyard Field Soil. 1919.
(a) untreated; (b) 10 cwt. per acre; (c) 1 ton per acre; (d) 2 tons per acre; (e) 3 tons per acre; (f) 4 tons per acre, of Lime applied as Carbonate of Lime.

organic matter 2·44 per cent. The "lime equivalent" (carbonate of lime required to neutralise) was, at the outset, ·095 per cent. The experiments were to be—as in the field—on barley; earthenware pots were used and each experiment was in duplicate.

The several applications were the same as in the field, viz., 1° lime (CaO) 10 cwt., 1 ton, 2 tons, 3 tons and 4 tons per acre respectively, and 2° carbonate of lime supplying the same amounts of lime (CaO) as in the foregoing. The materials were mixed with the top 5 inches of the soil in each pot to imitate what might occur in practice. Twenty seeds of barley per pot were sown on April 7th, 1919, and the germination noted. With the exception that with the higher quantities of carbonate of lime there appeared to be a slight retardation of germination, there was nothing special to observe, and with even the highest amounts of caustic lime there was no retardation. But as the plants grew (they were thinned to 12 on May 8th) marked differences of growth showed themselves between the two series. These are clearly set out in Plates 3 and 4. With caustic lime (Plate 3) there was a progressive increase and tillering of the crop right up to 4 tons of lime per acre, and this is borne out by the figures given in Table II; with chalk, however (Plate 4), one pot remained, to all appearance, much like another, and the results (Table II) show that the variations were not beyond those of experimental error. The crops were reaped on August 18.

Table II shows that, anyhow for the first year of application, lime and chalk behave very differently, the lime telling almost at once, whilst the chalk seemed to be inactive.

TABLE II.—*Lime and Chalk upon Barley*, 1919.

Treatment	Corn	Straw	Treatment	Corn	Straw
No Lime	100	100	No Lime	100	100
Lime (CaO) 10 cwt. per acre	120·6	116·7	Chalk equivalent to CaO 10 cwt. per acre	98·5	102·9
" " 1 ton " "	144·3	165·0	" " " 1 ton " "	113·3	109·6
" " 2 tons " .	233·0	245·3	" " " 2 tons " "	113·3	113·9
" " 3 " " "	292·8	292·1	" " " 3 " " "	124·1	113·8
" " 4 " " "	299·0	313·8	" " " 4 " " "	106·7	111·0

These results are those of the first year only, and, indeed, it is somewhat remarkable that the lime should have acted so quickly. It remains to be seen what will happen in subsequent years, and also whether any differences will be found in the case of the field experiment, which, as stated earlier, was rendered ineffective through the unfavourable season.

The very marked differences of 1919 in the pot-culture experiments—as seen both in Table II and in Plates 3 and

4—led to inquiry as to how far the soil had in each instance become neutralised by the addition of lime or of chalk. Accordingly, when the crops had been removed, the soil was sampled and examined to ascertain the then "lime equivalent." The following figures were obtained :—

	$CaCO^3$ required to neutralise		$CaCO_3$ required to neutralise
	per cent.		per cent.
Original soil (at commencement)	·095		
No lime added (at conclusion) .	·095		
Lime—10 cwt. per acre . .	·085	Chalk, equivalent to CaO—10 cwt. per acre	·065
" 1 ton " " . . .	·075	" " 1 ton " "	·035
" 2 " " " . . .	·065	" " 2 " " "	·035
" 3 " " " . . .	·045	" " 3 " " "	·035
" 4 " " " . . .	·035	" " 4 " " "	·025

These results are very remarkable, and leave room for considerable speculation as to what is the form which the CaO applied as caustic lime takes, for, while it clearly gives a marked crop increase, it leaves the soil far less neutralised than does the chalk. It will be noted, for instance, that the soil after the application of 4 tons of lime per acre is no more neutralised than it is by means of 1 ton per acre of chalk.

This is on the assumption, of course, that the recognised methods of determining the "lime equivalent" in soils are trustworthy as indicating the lime requirements of such soil. On this point considerable doubt is thrown by the present work. It will be of special interest to carry on this experiment, and to again determine the "lime equivalent" at the close of the 2nd and the 3rd season also. It would, however, appear that, for the purposes of maintaining neutrality, chalk is a much better medium than lime itself. This is further borne out by experiments conducted in 1915 (see Journal R.A.S.E. 1915, pp. 352-5), when it was found that, on the Herefordshire soil then employed, the caustic lime applied did not appear to be converted into the form of carbonate nor persist as a neutralising medium as did the carbonate of lime.

This experiment is being continued with wheat as the crop for 1919-20.

III. *The relative effects of different Nitrogenous Top-dressings.*

The supplies of nitrogenous salts for manurial purposes having been partly restored, it was decided to make, in conjunction with the field experiment (see page 426), a corresponding trial on barley under pot-culture conditions.

The salts compared were the same as used in the field, but, at the pot-culture station, they were used in two different concentrations, viz., as supplying nitrogen equivalent in the one case (as in the field) to 1 cwt. per acre of sulphate of ammonia, in the other case as equivalent to 2 cwt. per acre. The percentages of nitrogen in the several salts used were :—

	Percentage of Nitrogen	Ratio
Sulphate of ammonia	20·29	1·00
Nitrate of soda	15·83	1·28
Nitrate of ammonia	32·66	·62
Nitrate of lime	13·08	1·55
Nitrolim (granular)	14·37	1·41

The soil used was from Stackyard Field headlands, and to it was added carbonate of lime—at the rate of 2 tons per acre—to avoid the introduction of any question of acidity, and also superphosphate of lime at the rate of 5 cwt. per acre. Each experiment was in duplicate.

Barley was sown on April 23, 1919, and the plants came up quite well. The top-dressings were all applied in the solid form, and worked into the top-soil, the 1 cwt. dressings on May 22, the 2 cwt. dressings, the first half on May 22 and the second on May 30.

The only marked difference arising directly from the application was that a scorching of the leaves was produced by the granular nitrolim and this showed for a week or more, and for the first month no improvement of crop was noticeable.

Throughout the whole period of growth nothing looked so well as the crops to which nitrate of soda had been given, and between sulphate of ammonia, nitrate of ammonia, and nitrate of lime there was nothing to choose. The appearances were relatively much the same with the double applications, but, of course, more marked in comparison with the untreated. The crops were harvested on August 20, and the comparative results are given in Table III. The duplicates, it may be said, agreed very closely, and the experiment proceeded satisfactorily throughout.

Unfortunately—for the reasons given on page 426—there were not available for comparison the results of the field experiment (Road Piece), but it will be noticed that the general indications were much of the same character in the two sets. Nothing did better than nitrate of soda, and nitrolim was, by comparison, strikingly ineffective. In the higher amounts the nitrates differed little from one another. Sulphate of ammonia was not quite as effective as the several nitrates.

TABLE III.—*Nitrogenous top-dressings on Barley*, 1919.

	Equivalent of 1 cwt. per acre Sulphate of Ammonia		Equivalent of 2 cwt. per acre Sulphate of Ammonia	
	Corn	Straw	Corn	Straw
	Percentage of Untreated	Percentage of Untreated	Percentage of Untreated	Percentage of Untreated
No nitrogen	100	100	100	100
Nitrogen as sulphate of ammonia	139·7	144	186·3	176·1
„ „ nitrate of soda .	161·6	170·7	211·1	211·2
„ „ „ „ ammonia .	140·2	151·7	203·4	216·4
„ „ „ „ lime . .	135·7	155·6	207·7	203·2
„ „ nitrolim (granular) .	108·5	109·5	126·5	124·7

IV. *The Application of Sulphate of Ammonia in Solid or Liquid Form.*

In reviewing the pot experiments of the past, I found that there had been some diversity of practice with regard to the method of applying sulphate of ammonia as a top-dressing. Sometimes it had been applied, as in the field, in solid form, sometimes it had been put on dissolved in water, and the plants watered with this solution. I thought it would be of interest to see whether any material difference attached to either method.

Accordingly, soil taken as in the last experiment and similarly treated with carbonate of lime and superphosphate was used, and barley was sown on April 27, 1919. After thinning, the top dressings of sulphate of ammonia were given on May 21, at the rate of 2 cwt. per acre, in one case in solid form, in the other in solution, the whole application going on at one time. No real difference was observed during growth, and on reaping the crop, on August 19, the comparative results set out in Table IV. were given :—

TABLE IV.—*Application of Sulphate of Ammonia in Solid or in Liquid Form*, 1919.

Treatment	Corn	Straw
No sulphate of ammonia	100	100
Sulphate of ammonia, 2 cwt. per acre, applied in solid form	213·1	185·1
Sulphate of ammonia, 2 cwt. per acre, applied in solution	220·5	202·3

The differences here are not beyond those of experimental error, and it would seem as if it made little difference whether the sulphate of ammonia was put on as a solid or dissolved in water.

V. *Leather as a Manure.*

It has been mentioned on page 427 that leather, either natural and powdered or else chemically treated, was found, in a field experiment (Lansome Field), to be of no benefit whatever to a swede crop. It was determined to carry out, simultaneously with this, a pot-culture experiment on wheat, using, in addition to leather, other materials of organic nitrogenous nature, such as rape dust, shoddy and dried blood.

The soil was that from Stackyard Field and originally winter wheat was sown. The exceptional cold of Feb., 1919, however, killed the wheat, as it did in the other pot-experiments, and subsequently (March 22) spring wheat "(Red Marvel)" had to be sown in its place. This is never so satisfactory, we have found, in pot-culture work, as winter-sown wheat, and more especially when materials like leather, that are slowly acting, are concerned. Hence the results are given with some reserve.

Leather was used in the two forms of natural and "treated" leather. The former was dry and very finely powdered; it contained 4·96 per cent. of nitrogen, this being practically all insoluble in water. The "treated" leather had been acted on with sulphuric acid; it had 6·33 per cent. of nitrogen, of which 1·29 was soluble and 5·04 insoluble in water. The other materials contained nitrogen 11·85 per cent. (dried blood); nitrogen 5·43 per cent. (shoddy); and nitrogen 4·58 per cent. (rape dust). One ton of leather per acre was taken (treated or untreated) as a reference, and the comparative applications of the other materials were made to contain the same amount of nitrogen per acre as supplied in 1 ton of leather.

During the period of growth rape and dried blood gave, during the first two months, clear indications of an increase of crop, but the leather and the shoddy showed practically none. In June and July the leather seemed, however, to yield a slight improvement, and so things continued until the wheat was harvested on Aug. 19, when the comparative results set out in Table V. were given.

The duplicates in this experiment were not in all cases as nearly alike as could be wished, more especially with shoddy and the treated leather series generally, and, altogether, this experiment cannot be regarded as very satisfactory or conclusive. So far as it went, however, it bore out the conclusion of the field experiment, that natural leather, even when finely powdered, is, in the first year anyhow, of no use as a fertiliser. At the same time it has to be remembered that shoddy gave no better result. Both rape dust and dried blood

TABLE V.—*Leather (natural and "treated") and other organic nitrogenous materials on Wheat*, 1919.

	Corn	Straw		Corn	Straw
Untreated	100	100	Untreated	100	100
Leather Powder (natural) 1 ton per acre	96·0	101·2	Leather (treated) 1 ton per acre	123·3	110·8
Rape Dust=Nitrogen in 1 ton per acre of Leather . .	131·0	141·6	Rape Dust=Nitrogen in 1 ton per acre Treated Leather .	133·1	131·5
Dried Blood=Nitrogen in 1 ton per acre of Leather .	133·7	129·8	Dried Blood=Nitrogen in 1 ton per acre Treated Leather	126·5	127·5
Shoddy=Nitrogen in 1 ton per acre of Leather . . .	95·8	97·6	Shoddy=Nitrogen in 1 ton per acre Treated Leather .	105·3	113·0

gave substantial increases. In the "treated" leather series there would appear to have, possibly, been some benefit derived from the use of the "treated" leather, though the increase was confined to the corn; rape dust and dried blood again told more both in corn and straw. The results, however, as stated, must not be taken as more than general indications, and it would be well to repeat the experiment with a crop of longer duration of growth than spring-sown wheat.

In addition to the work recorded above, several other experiments were conducted at the pot-culture station, but the results, owing to incompleteness or failure, are not set out.

For instance, the series on felspar as a source of potash was continued for a third year, and with red clover. But no marked benefit was shown, even when sulphate of potash was used, and the Woburn soil would seem to be one on which it is difficult to obtain any results from the application of potash.

Another experiment was the continuation—on two different soils of the farm—of the work on the relative effects of the use of caustic lime and carbonate of lime, and of caustic magnesia and carbonate of magnesia. The value of these was, however, largely discounted by the fact of spring wheat having to be used after the winter wheat had failed, and the results generally were not in accord with previous observations.

Yet another short series was a partial repetition of the work of 1915 on boron compounds, and to which considerable attention had been directed, more particularly in America. The repetition now in 1919 went to confirm generally the previous work, and to show that anything above ·001 per cent. of boron present in the soil will injure a crop of barley, while as much as ·003 per cent. of boron, applied in the form of borax, will actually kill such a crop.

J. AUGUSTUS VOELCKER.

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	LONDON	533	3	W. W. Chapman; Sir Howard Frank; F. Hamlyn Price.
	NOTTINGHAMSHIRE	195	1	C. M. S. Pilkington.
	RUTLAND	24	1	Lord Ranksborough.
	SHROPSHIRE	423	2	Lord Harlech; Alfred Mansell.
	SUFFOLK	233	1	Fred Smith.
	SURREY	231	1	Major Dunbar Kelly.
	WILTSHIRE	190	1	D. Combes, junr.
	YORKSHIRE, W.R.	356	2	Major G. R. Lane-Fox, M.P. C. Howard Taylor.
	SOUTH WALES	166	1	Col. C. Venables Llewelyn.
		——3,461	—19	
C.	BERKSHIRE	199	1	W. A. Mount, M.P.
	CAMBRIDGESHIRE	214	1	J. L. Luddington.
	CUMBERLAND	136	1	Joseph Harris.
	GLAMORGAN	226	1	D. T. Alexander.
	GLOUCESTERSHIRE	360	2	H. D. Brocklehurst; R. Gray.
	HUNTINGDONSHIRE	46	1	John Rowell.
	KENT	391	2	T. L. Aveling; H. F. Plumptre.
	LINCOLNSHIRE	336	2	John Evens; C. W. Tindall.
	OXFORDSHIRE	184	1	Robert Hobbs.
	SOMERSET	197	1	Lord Strachie.
	SUSSEX	333	2	U. Roland Burke; W. F. Ingram.
	WARWICKSHIRE	235	1	Capt. R. Oliver-Bellasis.
	WESTMORLAND	70	1	Lord Henry Bentinck.
	YORKSHIRE, E.R.	146	1	Capt. T. L. Wickham-Boynton.
	IRELAND	110	1	Right Hon. F. Wrench.
	NORTH WALES	278	1	A. E. Evans.
		——3,461	—20	
FOREIGN COUNTRIES		245		
MEMBERS WITH NO ADDRESSES		25		
GRAND TOTALS		11,348	63	

TABLE SHOWING THE NUMBER OF GOVERNORS AND MEMBERS IN EACH YEAR FROM THE ESTABLISHMENT OF THE SOCIETY.

Year ending with Show of	President of the Year	Governors		Members			Total.
		Life	Annual	Life	Annual	Honorary	
1839	3rd Earl Spencer	—	—	—	—	—	1,100
1840	5th Duke of Richmond	86	189	146	2,434	5	2,860
1841	Mr. Philip Pusey	91	219	231	4,047	7	4,595
1842	Mr. Henry Handley	101	211	328	5,194	15	5,849
1843	4th Earl of Hardwicke	94	209	429	6,155	15	6,902
1844	3rd Earl Spencer	95	214	442	6,161	15	6,927
1845	5th Duke of Richmond	94	198	527	5,899	15	6,733
1846	1st Viscount Portman	92	201	554	6,105	19	6,971
1847	6th Earl of Egmont	91	195	607	5,478	20	6,391
1848	2nd Earl of Yarborough	93	186	648	5,387	21	6,335
1849	3rd Earl of Chichester	89	178	582	4,643	20	5,512
1850	4th Marquis of Downshire	90	169	627	4,356	19	5,261
1851	5th Duke of Richmond	91	162	674	4,175	19	5,121
1852	2nd Earl of Ducie	93	156	711	4,002	19	4,981
1853	2nd Lord Ashburton	90	147	739	3,928	19	4,923
1854	Mr. Philip Pusey	88	146	771	4,152	20	5,177
1855	Mr. William Miles, M.P.	89	141	795	3,838	19	4,882
1856	1st Viscount Portman	85	139	839	3,896	20	4,979
1857	Viscount Ossington	83	137	898	3,933	19	5,068
1858	6th Lord Berners	81	133	904	4,010	18	5,146
1859	7th Duke of Marlborough	78	130	927	4,008	18	5,161
1860	5th Lord Walsingham	72	119	927	4,047	18	5,183
1861	3rd Earl of Powis	84	90	1,113	3,328	18	4,633
1862	H.R.H. The Prince Consort 1st Viscount Portman	83	97	1,151	3,475	17	4,823
1863	Viscount Eversley.	80	88	1,263	3,735	17	5,183
1864	2nd Lord Feversham	78	45	1,343	4,013	17	5,496
1865	Sir E. C. Kerrison, Bart., M.P.	79	81	1,386	4,190	16	5,752
1866	1st Lord Tredegar	79	84	1,395	4,049	15	5,622
1867	Mr. H. S. Thompson	77	82	1,388	3,903	15	5,465
1868	6th Duke of Richmond.	75	74	1,409	3,888	15	5,461
1869	H.R.H. The Prince of Wales, K.G.	75	73	1,417	3,864	17	5,446
1870	7th Duke of Devonshire	74	74	1,511	3,764	15	5,436
1871	6th Lord Vernon	72	74	1,589	3,896	17	5,648
1872	Sir W. W. Wynn, Bart., M.P.	71	73	1,655	3,953	14	5,768
1873	Earl Cathcart.	74	62	1,832	3,936	12	5,916
1874	Mr. Edward Holland	76	58	1,944	3,756	12	5,846
1875	Viscount Bridport.	79	79	2,058	3,918	11	6,145
1876	2nd Lord Chesham	83	78	2,164	4,013	11	6,349
1877	Lord Skelmersdale	81	76	2,239	4,073	17	6,486
1878	Col. Kingscote, C.B., M.P.	81	72	2,328	4.130	26	6,637
1879	H.R.H. The Prince of Wales, K.G.	81	72	2,453	4,700	26	7,332
1880	9th Duke of Bedford	83	70	2,673	5,083	20	7,929
1881	Mr. William Wells.	85	69	2,765	5,041	19	7,979
1882	Mr. John Dent Dent	82	71	2,849	5.059	19	8,080
1883	6th Duke of Richmond and Gordon	78	71	2,979	4,952	19	8,099
1884	Sir Brandreth Gibbs	72	72	3,203	5.408	21	8,776
1885	Sir M. Lopes, Bart., M.P.	71	69	3,356	5,619	20	9,135
1886	H.R.H. The Prince of Wales, K.G.	70	61	3,414	5,569	20	9.134
1887	Lord Egerton of Tatton	71	64	3,440	5,387	20	8,982
1888	Sir M. W. Ridley, Bart., M.P.	66	56	3,521	5,225	16	8,884
1889	HER MAJESTY QUEEN VICTORIA	73	58	3,567	7,153	15	10,866
1890	Lord Moreton	122	58	3,846	6,941	17	10,984
1891	2nd Earl of Ravensworth	117	60	3,811	6,921	19	10,928
1892	1st Earl of Feversham	111	69	3,784	7,066	20	11,050
1893	1st Duke of Westminster, K.G.	107	74	3,786	7,138	21	11,126
1894	8th Duke of Devonshire, K.G.	113	73	3,798	7,212	22	11,218
1895	Sir J. H. Thorold, Bart.	120	80	3,747	7,179	23	11,149
1896	Sir Walter Gilbey, Bart.	126	83	3,695	7,253	23	11,180
1897	H.R.H. The Duke of York, K.G.	126	83	3,705	7,285	24	11,223
1898	5th Earl Spencer, K.G.	121	79	3,687	7,182	25	11,094
1899	Earl of Coventry	116	75	3,656	7,009	23	10,879
1900	H.R.H. The Prince of Wales, K.G.	111	71	3,628	6,832	24	10,666
1901	3rd Earl Cawdor	102	70	3,564	6,338	27	10,033
1902	H.R.H. Prince Christian, K.G.	100	69	3.500	5,955	26	9,650
1903	H.R.H. The Prince of Wales, K.G.	99	62	3,439	5,771	27	9,398
1904	16th Earl of Derby, K.G.	96	68	3,375	5,906	32	9,477
1905	Lord Middleton	89	78	3,212	5,758	33	9,170
1906	Mr. F. S. W. Cornwallis	94	155	3,132	6,189	30	9,600
1907	Earl of Yarborough	91	174	3,076	6,299	29	9,669
1908	Duke of Devonshire	89	178	3.019	6,442	30	9,758
1909	7th Earl of Jersey, G.C.B.	91	177	2,951	6,696	31	9,946
1910	Sir Gilbert Greenall, Bart.	86	166	2,878	6,934	31	10,095
1911	HIS MAJESTY KING GEORGE V.	85	168	2,805	7,191	30	10,279
1912	Lord Middleton	85	170	2,741	7,283	30	10,309
1913	Earl of Northbrook	89	168	2,691	7,474	26	10,448
1914	Earl of Powis	89	173	2,626	7,629	28	10,545
1915	Duke of Portland, K.G.	88	184	2,517	7,313	28	10,130
1916	7th Duke of Richmond and Gordon, K.G.	83	185	2,427	7,526	27	10,248
1917	Mr. Charles Adeane, C.B.	93	210	2,412	8,214	26	10,955
1918	Hon. Cecil T. Parker	102	224	2,395	8,226	25	10,972
1919	Sir J. B. Bowen-Jones, Bart.	119	236	2,411	8,558	24	11,348

STATEMENT made to the Council by the Chairman of the Finance Committee, on presenting the Accounts for the year 1919.

Mr. ADEANE, in presenting, on behalf of the Finance Committee, the Accounts of the Society for the year 1919, said that the financial statement which he was then able to lay before the Council for the year ending December 31, 1919, he thought would be considered satisfactory.

The increase of income as compared with that of 1918 was 2,364*l.*, and it was gratifying to note that a large part of that was due to an increase of subscriptions and income from investments. The increase of expenditure was large, amounting to 3,018*l.*, but it must be remembered that last year they made out of income a contribution to the Woburn Farm of 1,300*l.*—a sum which they might consider as an addition to capital. There had been an addition to the salaries of the official staff, of which he was sure they all approved, and there had also been other increases under the head of house painting, and also printing. They must expect the expenditure of the Society to increase in these times, and it was therefore desirable to maintain their income at as high a level as possible. For that they must look to an increase of membership and also to profits on their shows. Fortunately Cardiff brought a record, and the Society would feel the benefit of the increased income from investments this year. The total expenditure for 1919 was 14,099*l.*, and the receipts 14,076*l.*, leaving a small debit balance of 23*l.*

The Society's capital showed a net increase of 12,228*l.* It would be noticed that the depreciations amounted to 3,869*l.* The Finance Committee thought it wise, in view of the heavy depreciation of gilt-edged securities, to write the Society's holdings down to their present value. There was, however, no cause for alarm, as all their securities were terminable, and must therefore gradually regain their par value. The present value of the invested fund is 67,101*l.*

Mr. ADEANE then presented the following estimate of receipts and expenditure for the year 1920:—

FORECAST OF ORDINARY RECEIPTS AND EXPENDITURE FOR 1920.

(Other than in respect of the Show.)

Prepared by direction of the Finance Committee on the basis of the Recommendations of September 21, 1905, made by the Special Committee.

Actual Figures for 1919.	*Receipts.*	
£		£
9,978	From Subscriptions for 1920 of Governors and Members	9,980
249	From Interest on Daily Balances	200
2,092	From Interest on Investments	2,546
1,757	From Sales of Text Books, Pamphlets, &c. (This does not include the sales of Journals which are deducted from the cost of production.)	1,150
14,076		13,876

	Expenditure.	
£		£
2,025	Salary of Secretary and Official Staff	2,270
140	Pensions to Officials	140
1,022	Rent, Lighting, Cleaning, Wages, &c.	950
857	Printing and Stationery	850
181	Postage and Telegrams	200
256	Miscellaneous	250
1,000	Journal	1,000
785	Chemical Department	715
150	Contribution to Woburn Farm	150
135	Contribution to Hills' Bequest	230
275	Botanical Department	250
220	Zoological Department	200
403	Veterinary Department	400
100	Grant to Research Institute, University College, Reading	100
52	Consulting Engineer	52
250	Examinations for National Diploma (R.A.S.E. Share)	220
2,500	Amount set aside towards loss on Shows	2,500
10,351		10,477

	Exceptional Expenditure.	
—	Trials of Agricultural Tractors and Ploughs	2,000
1,300	Special Grant to Woburn Farm	—
1,372	Reprint of Society's Text Book	792
193	Emergency Committee	200
181	Occasional Notes to Members	180
38	Library—Binding of Books, &c.	100
10	Subscription to Conjoint Board of Scientific Societies	10
175	Honorarium to Secretary and two Members of Staff	—
231	Excess Expenditure in Production of Journal	500
68	Printing Farm Account Books	75
—	Renewals at Pot Culture Station	81
180	Painting 16 Bedford Square	—
14,099		14,415

		£
	Estimated Expenditure	14,415
Debit balance.	Estimated Receipts	13,876
23	Estimated Expenditure over Receipts	539

STATEMENT OF RECEIPTS AND EXPENDI-

JUNE 24 TO

Receipts.

Corresponding figures for 1916. £		£ s. d.	£ s. d.	£ s. d.
2,000	Subscription from City of Cardiff			2,000 0 0
2,049	Prizes given by Agricultural and Breed Societies		2,951 7 0	
1,476	Prizes given by Cardiff Local Committee		982 0 0	
				3,933 7 0
750	Contributions to Show Fund			117 17 0
761	*Tickets for County Society*			—
	FEES FOR ENTRY OF IMPLEMENTS:—			
3,294	Implement Exhibitors' Payments for Shedding		7,523 13 10	
49	Non-Members' Fees for Entry of Implements		152 0 0	
22	Fees for Entry of "New Implements"		174 0 0	
3,365				7,849 13 10
	FEES FOR ENTRY OF LIVE STOCK:—			
2,066	By 2,103 Members' Entries @ 30*s.*		3,154 10 0	
—	31 Members' Entries @ 1*l.*		31 0 0	
185	305 Members' Entries @ 10*s.*		152 10 0	
6	21 Members' Entries @ 2/6		2 12 6	
3	19 Substituted Entries @ 5*s.*		4 15 0	
218	219 Non-Members' Entries @ 3*l.*		657 0 0	
—	9 Non-Members' Entries @ 2*l.*		18 0 0	
—	70 Non-Members' Entries @ 15*s.*		52 10 0	
11	4 Substituted Entries @ 10*s.*		2 0 0	
450	Horse Boxes (419 @ 1*l.*; 79 @ 2*l.*; 1 @ 10*s.*)		577 10 0	
2,939				4,652 7 6
	FEES FOR ENTRY OF POULTRY:—			
47	By Members:—222 Entries @ 3*s.* 6*d.*		38 17 0	
199	By Non-Members:—1,156 Entries @ 5*s.*		289 0 0	
246				327 17 0
	OTHER ENTRY FEES:—			
73	Produce		87 1 0	
—	Rabbits		67 18 6	
59	Horse-jumping Competitions		82 0 0	
—	Timbering Competition		7 17 6	
—	Plantation Competition		28 15 6	
132				273 12 6
	CATALOGUE:—			
1	Extra Lines for Particulars of Implement Exhibits	10 5 0		
1	Woodcuts of "New Implements"	27 2 3		
469	Advertising in Catalogue	804 6 9		
13	Sales of Implement Section of Catalogue	29 0 0		
675	Sales of Combined Catalogue	1,343 7 1		
7	Sales of Jumping Programme	19 15 0		
1,166			2,233 16 1	
36	*Less* Commission on Sales		49 2 9	
1,130				2,184 13 4
	MISCELLANEOUS RECEIPTS:—			
800	Admission to Flower Show		491 4 6	
21	*Admission to Dog Show*		—	
75	*Premium for Supply of Refreshments*		—	
97	Garage		258 6 3	
89	Rent for Railway Offices		93 15 0	
60	Premium for Cloak Rooms		60 0 0	
30	Rent for Board of Agriculture Pavilion		30 0 0	
114	Advertisements in Stock Prize Sheet		186 13 8	
5	Advertisements in Showyard		11 10 0	
22	Miscellaneous		12 0 2	
1,313				1,143 9 7
£16,161	Carried forward			£22,482 17 6

TURE OF THE SHOW AT CARDIFF,
JUNE 28, 1919.

Expenditure.

Corresponding figures for 1916. £		£	s.	d.	£	s.	d.
	COST OF ERECTION OF SHOWYARD :–						
1,584	Transferring Society's Permanent Buildings from Manchester to Cardiff (including taking down and re-erecting)	1,790	3	3			
641	Fencing round Showyard	646	3	5			
924	Implement Shedding	1,444	15	9			
2,532	Stock Shedding	3,395	15	9			
328	Poultry and Produce Sheds	361	0	3			
—	Rabbit Shed	219	16	10			
323	Dairy	424	16	9			
67	Fodder Shed and Office	109	7	7			
—	Education and Forestry	472	9	0			
413	Grand Stand and Large Ring	469	8	3			
761	Various Offices and Stands	727	3	10			
491	Painting Signs and fixing do., Fencing and Judging Rings	520	14	1			
42	Insurance	39	17	9			
17	Ironmongery	270	9	1			
781	Hire of Canvas	1,423	5	2			
—	New Timber	1,728	1	2			
568	General Labour and Horse Hire (including Society's Clerk of Works)	4,032	15	4			
—	Extra Travelling Expenses	48	15	4			
9,472		18,122	18	7			
40	*Less* Rent of 80 Flagpoles at 10s.	40	0	0			
9,432					18,082	18	7
	SURVEYOR :—						
445	Salary, 350*l.*; Assistant Surveyor's Salary, 50*l.*; Travelling Expenses to London, 51*l.* 9*s.*; Stationery, 4*l.* 7*s.* 8*d.*; Petty Cash, 8*l.* 15*s.* 6*d.*				464	12	2
	PRINTING :—						
701	Printing of Prize Sheets, Entry Forms, Admission Orders, Circulars to Exhibitors, Prize Cards, Tickets and Miscellaneous	1,540	9	0			
53	Programmes for Members	95	16	0			
39	Plans of Showyard	53	13	6			
780	Printing of Catalogues	2,476	2	8			
79	Binding of Catalogues	217	9	2			
46	Carriage of Catalogues	86	13	6			
179	Printing Awards	48	0	0			
22	Programmes of Jumping Competitions	58	10	0			
1,899					4,576	13	10
	ADVERTISING :—						
121	Advertising Closing of Entries in Newspapers	184	16	5			
283	Advertising Show in Newspapers	298	8	7			
670	Bill Posting	300	6	3			
320	Printing of Posters, &c.	280	16	0			
32	Press Visit	33	1	1			
1,426					1,097	8	4
	POSTAGE, CARRIAGE, &C. :—						
107	General Postage	151	9	8			
35	Postage of Badges to Members	57	8	9			
7	Carriage of Luggage	10	2	8			
149					219	1	1
8,258	AMOUNT OF PRIZES AWARDED, including 3,933*l.* 7*s.* 0*d.* given by various Societies and Cardiff Local Committee				8,727	17	0
	COST OF FORAGE FOR LIVE STOCK :—						
1,004	Hay 714*l.* 5*s.* 5*d.*; Straw, 605*l.* 8*s.* 11*d.*; Green Food, 344*l.* 15*s.* 1*d.*; Labour, 97*l.* 1*s.* 2*d.*; Cartage, 69*l.* 7*s.* 0*d.*; Miscellaneous 2*l.* 19*s.*				1,833	16	7
	JUDGES' FEES AND EXPENSES :—						
523	Judges of Miscellaneous Implements, 31*l.* 4*s.*; Horses, 184*l.* 4*s.* 7*d.*; Cattle, 184*l.* 18*s.* 10*d.*; Sheep, 253*l.* 19*s.* 9*d.*; Pigs, 56*l.* 4*s.* 8*d.*; Goats, 6*l.* 19*s.* 6*d.*; Poultry, 83*l.* 4*s.* 8*d.*; Rabbits, 15*l.*; Produce, 59*l.* 15*s.* 7*d.*; Luncheons 85*l.* 10*s.*; Timbering Compn., 4*l.* 4*s.*				945	5	5
39	Badges for Judges and other Officials				105	17	0
36	Rosettes				115	5	6
£23,211	Carried forward				£36,168	15	6

Receipts (*contd.*).

Corresponding figures for 1916 £		£	*s.*	*d.*	£	*s.*	*d.*
16,161	Brought forward				22,482	17	9
	ADMISSIONS TO SHOWYARD:—						
1,014	Tuesday, June 24, @ 5*s.*	2,127	1	7			
3,613	Wednesday, June 25, @ 3*s.*	6,651	5	3			
4,574	Thursday, June 26, @ 3*s.*	10,208	14	10			
2,008	Friday, June 27, @ 2*s.*	3,513	4	0			
1,841	Saturday, June 28, @ 2*s.*	3,205	14	4			
238	Season Tickets	993	3	6			
130	Day Tickets	562	4	1			
13,418					27,261	7	7
	ENTRANCES TO HORSE RING:—						
286	Wednesday, June 25	384	19	0			
287	Thursday, June 26	423	5	6			
168	Friday, June 27	268	12	0			
156	Saturday, June 28	161	9	6			
349	Tickets sold for Reserved Enclosure	1048	5	6			
1,246					2,286	11	6
	SALES:—						
164	Sales of Produce at Dairy				196	19	9
208	Auction Sales in Showyard (Share of Commission)				508	15	9
£31,197					£52,736	12	4

Examined, audited, and found correct, this 27th day of November, 1919.

THOMAS McROW, *Secretary.*
DELOITTE, PLENDER, GRIFFITHS & CO., *Accountants.*

JONAS M. WEBB,
H. J. GREENWOOD,
NEWELL P. SQUAREY, } *Auditors on behalf of the Society.*

Expenditure (*contd.*).

Corresponding figures for 1916. £		£ s. d.	£ s. d.
23,211	Brought forward		36,168 15 6
	GENERAL ADMINISTRATION :—		
98	*Stewards* :—Personal and Railway Expenses	172 9 4	
95	*Assistant Stewards* :—Personal and Railway Expenses	168 7 9	
265	*Official Staff* :—Extra Clerks, 199*l.* 7*s.* 8*d.*; Lodgings, 53*l.* 10*s.* 3*d.*; Maintenance of Clerks, 58*l.* 19*s.* 3*d.*; Travelling Expenses, 16*l.* 9*s.* 7*d.*; Secretary's Hotel and Travelling Expenses, 122*l.* 18*s.* 3*d.*	451 5 0	
124	*Finance Office* :—Finance Clerks, 31*l.* 13*s.* 3*d.*; Grand Stand Men, 67*l.* 6*s.* 5*d.*; Turnstile Men, 46*l.*; Bank Clerks, 31*l.* 4*s.*; Refreshments, 3*l.* 8*s.*	179 11 8	
41	*Awards Office* :—Clerks, 37*l.* 18*s.* 6*d.*; Awards Boys, 18*l.* 14*s.* 6*d.*	56 13 0	
623			1,028 6 9
	General Management :—		
102	Foreman and Assistant Foremen	132 5 3	
56	Yardmen and Foddermen	71 18 1	
68	Door and Gate Keepers	132 19 4	
87	*Veterinary Department* :—Veterinary Inspectors	109 8 7	
40	*Engineering Department* :—Consulting Engineer and Assistant, 39*l.* 18*s.*; House, Maintenance, and Travelling Expenses, 40*l.* 7*s.* 2*d.*	80 5 2	
575	*Police, &c.* :—Cardiff Police, 600*l.*; Commissionaires, 18*l.* 15*s.*	618 15 0	
928			1,145 11 5
419	*Dairy* :—Staff, 200*l.* 13*s.* 11*d.*; Milk, 57*l.* 5*s.* 5*d.*; Ice, 18*l.*; Utensils, 101*l.*; Salt, 3*l.* 12*s.*; Engine, 15*l.* 12*s.* 1*d.*; Butter Tests, 26*l.* 16*s.* 10*d.*; Shafting, 21*l.* 14*s.*; Lodgings, 14*l.* 13*s.*; Carriage, 2*l.* 14*s.* 8*d.*; Butter and Cheese Boxes, 5*l.* 19*s.*; Milk Analysis, 35*l.* 4*s.*; Refreshments, 26*l.* 6*s.* 11*d.*; Labour, 4*l.* 3*s.* 6*d.*; Fuel, 4*l.* 17*s.* 11*d.*; Miscellaneous, 18*l.* 4*s.* 10*d.*; Purchase of Cheese, 4*l.* 6*s.* 8*d.*	561 4 9	
15	Analysis of Cider	10 11 9	
70	*Poultry* :—Superintendent and Assistants, 17*l.* 15*s.*; Penning and Feeding, 96*l.* 19*s.* 9*d.*; Labour, 12*l.* 15*s.* 11*d.*; Carriage, 25*l.* 0*s.* 5*d.*; Demonstrator, 15*l.* 15*s.*	168 6 1	
504			740 2 7
431	*Flower Show* :—Hire of Tents, 266*l.* 17*s.* 1*d.*; Judges, 27*l.* 10*s.* 3*d.* Wages, 85*l.* 13*s.* 6*d.*; Medals, 31*l.* 16*s.*; Printing, 20*l.*; Advertising, 14*s.*; Carriage, 4*l.* 15*s.* (For Admissions see Miscellaneous Receipts.)		437 5 10
	GENERAL SHOWYARD EXPENSES :—		
215	*Band*	—	
40	*Ambulance*	—	
25	Telephone Extension	281 16 7	
—	Telegraph Extension	240 0 0	
44	Hire of Chairs	59 4 5	
85	Hire of Furniture	56 12 0	
3	Official Luncheons	124 19 0	
5	Plans of Yard	64 9 4	
18	Medals	39 11 6	
4	Hire of Safes	6 10 0	
20	Hire of Weighbridge	29 5 0	
8	*Hire of Turnstiles*	—	
—	Engraving Cups	19 17 6	
5	*Fodder*	—	
19	Billposting in Showyard	18 10 0	
—	Education and Forestry	57 0 10	
—	Carriage and Purchase of Sleepers	29 4 0	
—	Flags and Cord	11 1 6	
4	Gas and Fittings	11 6 8	
—	Hire of Bath Chairs	37 18 10	
12	*Fencing*	—	
3	Tan	8 15 9	
12	Carriage	10 14 11	
43	Miscellaneous	41 16 6	
565			1,148 14 4
439	*Entertainment Tax*		—
15	Outstanding Account from Manchester Show		28 16 9
26,716			40,697 13 2
4,481	Credit Balance		12,038 19 2
£31,197			£52,736 12 4

Actual profit on the Cardiff Show	£12,038 19 2
Add :—Contribution from the Ordinary Account to Show Fund.	2,500 0 0
	£14,538 19 2

Dr.

BALANCE SHEET

Corresponding figures for 1918.		£ s. d.	£ s. d.	£ s. d.
£	To SUNDRY CREDITORS—			
3,517	Sundry Creditors		4,607 18 4	
62	Subscriptions received in 1919 in advance		94 4 0	
	Show receipts received in 1919 but belonging to 1920		1,981 3 0	
3,579				6,683 5 4
	To CAPITAL—			
58,393	As at December 31, 1918		61,047 11 9	
	SHOW FUND—			
	Profit on Show at Cardiff	12,038 19 2		
	Amount set aside from ordinary account	2,500 0 0		
1,111			14,538 19 2	
1,110	Life Compositions received in 1919		1,612 15 0	
50	Donation towards the Society's Funds		50 0 0	
			77,249 5 11	
	Less Sundry debts unrecoverable	81 5 9		
631	*Cr.* Debit balance on ordinary income and expenditure account	22 18 4	104 4 1	
61,295			77,145 1 10	
	DEPRECIATIONS written off, viz.:—			
	War Stock 5 per cent. (1929-1947)	1,849 4 11		
	Metropolitan 3 per cent. (1941)	681 19 5		
	Canadian 4 per cent. (1940-1960)	1,110 3 7		
19	Fixtures	17 18 1		
68	Furniture	61 10 10		
4	Machinery	3 9 7		
106	Show Plant	95 7 0		
50	Buildings at Woburn	50 0 0		
247			3,869 13 5	
61,048				73,275 8 5
£64,627				£79,958 13 9

THOMAS McROW, *Secretary.*

DELOITTE, PLENDER, GRIFFITHS & CO., *Accountants.*

SOCIETY OF ENGLAND.

DECEMBER 31, 1919.

Cr.

Corresponding figures for 1918. £		£ s. d.	£ s. d.
	By RESERVE FUND—		
43,555	65,163*l.* 9*s.* 1*d.* 5 per cent. War Stock (1929-1947) @ 91⅝*		59,706 0 4
387	500*l.* War Saving Certificates @ cost		387 10 0
2,500	2,840*l.* 13*s.* 6*d.* Metropolitan 3 per cent. Consolidated Stock (1941) @ 64*		1,818 0 7
6,300	6,528*l.* 1*s.* 6*d.* Canadian 4 per cent. Stock (1940-1960) @ 79½*		5,189 16 5
	*Written down to market value at 31 Dec., 1919.		
	By LEASE OF 16 BEDFORD SQUARE	1,800 0 0	
	Less Amount written off	100 0 0	
1,800			1,700 0 0
	By FIXTURES—		
	Value at December 31, 1918	238 14 2	
	Less Depreciation at 7½ per cent.	17 18 1	
239			220 16 1
	By FURNITURE—		
	Value at December 31, 1918	615 8 8	
	Less Depreciation at 10 per cent.	61 10 10	
		553 17 10	
	Added during 1919	39 8 0	
615			593 5 10
1,571	By PICTURES (500*l.*) and BOOKS (1,071*l.* 4*s.* 10*d.*)		1,571 4 10
	By MACHINERY—		
	Value at December 31, 1918	34 16 7	
	Less Depreciation at 10 per cent.	3 9 7	
35			31 7 0
	By SHOW PLANT—		
	Value at December 31, 1918	953 10 5	
	Less Depreciation at 10 per cent.	95 7 0	
		858 3 5	
	Added during 1919	2 5 0	
954			860 8 5
	By BUILDINGS FOR POT EXPERIMENTS AT WOBURN—		
	As per Account at December 31, 1918	50 0 0	
50	*Less* Depreciation	50 0 0	—
3,462	*Expenditure on Cardiff Show*		
1,000	By SUNDRY DEBTORS		2,016 8 3
	By CASH AT BANKERS AND IN HAND—		
494	Reserve Fund	2,100 15 11	
1,625	Ordinary Account	3,709 1 3	
40	In Hand	59 18 10	
2,159			5,869 16 0
£64,627			£79,958 13 9

Examined, audited, and found correct, this 26th day of February, 1920.

JONAS M. WEBB, } *Auditors on behalf of the Society.*
H. J. GREENWOOD, }

STATEMENT OF ORDINARY INCOME

The Expenditure in this account includes not only cash payments,

Income.

Corresponding figures for 1918. £		£	s.	d.	£	s.	d.
	ANNUAL SUBSCRIPTIONS:—						
1,178	*Governors*: Subscriptions for 1919	1,270	0	0			
240	*Members*: Received in 1918, but belonging to 1919	61	13	0			
7,589	Subscriptions for 1919	8,287	7	7			
114	Subscriptions for 1919 (additional)	115	5	0			
142	Subscriptions for previous years	182	12	0			
	LIFE GOVERNORS AND MEMBERS:—						
64	Annual Contributions	61	3	0			
9,327					9,978	0	7
	MISCELLANEOUS:—						
67	Interest on Daily Balances	249	2	6			
1,849	Income from Investments	2,092	8	2			
64	Sales of Pamphlets, Farm Account Books and Diagrams	175	3	2			
390	Sales of Text Book	1,151	10	11			
—	Royalty on 20,000 Copies of Text Book	333	6	8			
—	Sales of Library Catalogues	69	4	8			
15	Miscellaneous	27	6	0			
2,385					4,098	2	1
	Rent of 12 Hanover Square	231	0	0			
	Less Rent paid	231	0	0			
					14,076	2	8
—	DEBIT BALANCE CARRIED TO BALANCE SHEET				22	18	4
£11,712					£14,099	1	0

THOMAS McROW, *Secretary.*
DELOITTE, PLENDER, GRIFFITHS & CO., *Accountants.*

AND EXPENDITURE FOR THE YEAR 1919.

but all liabilities in connection with the year's transactions.

Expenditure.

Corresponding figures for 1918. £		£ s. d.	£ s. d.	£ s. d.
	GENERAL ADMINISTRATION :—			
1,610	Salaries of Official Staff (including clerical assistance)		2,024 14 7	
140	Pensions to Officials		140 0 0	
59	Legal Charges and Auditors' Fees		79 16 0	
847	Rent, Rates, Taxes, Insurance, and House Expenses		1,022 2 6	
1	Purchase of Books		12 15 6	
624	Printing and Stationery		856 16 7	
206	Postage and Telegrams		180 16 3	
69	Carriage of Parcels and Travelling Expenses		80 5 10	
70	Advertising and Miscellaneous Office Expenses		83 5 2	
3,626				4,480 12 5
	JOURNAL OF THE SOCIETY, VOL. 80 :—			
771	Printing and Binding		848 6 10	
245	Postage, Packing, and Delivery		245 0 0	
250	Editing and Literary Contributions		250 0 0	
60	Illustrations		60 0 0	
1,326			1,403 6 10	
51	*Less* Sales (Vol. 79 and earlier)	78 6 10		
275	Advertisements (Vol. 80)	325 0 0		
320			403 6 10	
1,000				1,000 0 0
197	Excess expenditure in production of Vol. 79			230 19 2
400	Printing Text Book			1,371 13 4
174	Printing Farm Account Books			68 6 8
	LABORATORY :—			
715	Salary, Honorarium and Petty Cash			784 14 5
	OTHER SCIENTIFIC DEPARTMENTS :—			
250	Botanist's Salary and Honorarium		275 0 0	
200	Zoologist's Salary and Honorarium		220 0 0	
52	Consulting Engineer		52 10 0	
400	Grant to Royal Veterinary College		400 0 0	
100	Grant to Research Institute, University College, Reading		100 0 0	
3	Medals for Proficiency in Cattle Pathology		3 8 0	
1,005				1,050 18 0
	NATIONAL DIPLOMA IN AGRICULTURE :—			
131	Honoraria and Expenses of Examiners		154 5 11	
28	Travelling Expenses of Officials		55 6 10	
40	Hotel Expenses of Examiners and Officials		38 2 0	
25	Printing, Stationery, and Postage		57 17 0	
1	Writing Diplomas		6 15 0	
74	Salaries for Assistants		74 10 0	
299			386 16 9	
44	*Less* Entry Fees and Sales of Examination Papers		75 14 6	
255			311 2 3	
128	*Less* Highland and Agricultural Society's Moiety		155 11 1	
127				155 11 2
	NATIONAL DIPLOMA IN DAIRYING :—			
16	Hire of Premises, &c.		20 13 3	
51	Fees to Examiners		78 19 11	
34	Hotel and Travelling Expenses		37 10 9	
13	Printing and Postage		21 11 9	
114			158 15 8	
61	*Less* Entry Fees and Sales of Examination Papers		64 10 6	
53				94 5 2
	EXTRA EXPENDITURE :—			
400	Library :—Binding of Books, &c.		37 17 0	
137	*Assistance in preparing Catalogue*		—	
131	Hills' Bequest :—Contribution for current year		134 17 0	
116	*Balance of Income Tax*		—	
200	War Emergency Committee		193 1 7	
150	Contribution towards Woburn Farm		1,450 0 0	
15	Subscription to Conjoint Board of Scientific Societies		10 0 0	
15	*Mechanical Road Transport Association*		—	
135	Occasional Notes to Members		181 5 1	
—	Honorarium to Staff		175 0 0	
—	Painting Society's House		180 0 0	
1,284				2,362 0 8
2,500	AMOUNT SET ASIDE TOWARDS LOSS ON SHOWS			2,500 0 0
631	*Credit balance carried to balance sheet*			
£11,712				£14,099 1 0

Examined, audited, and found correct, this 26th day of February, 1920.

JONAS M. WEBB, } *Auditors on behalf of the Society.*
H. J. GREENWOOD,

Royal Agricultural Society of England.

STATEMENT OF FUNDS HELD BY THE SOCIETY IN TRUST OR WHICH ARE NOT CONSIDERED AVAILABLE FOR GENERAL PURPOSES, DECEMBER 31, 1919.

			£ s. d.
To Hills' Bequest for Pot-culture Experiments.			9,000 0 0
Less: Depreciation of Consols at time of conversion		£ s. d. 3,582 7 11	
„ Cost of conversion		134 14 7	3,717 2 6
			5,282 17 6
To Fund provided by the late Sir Walter Gilbey for Endowment of Lectureship at Cambridge when after a certain date any balance on this account will become the property of the Society			1,189 19 10
			£1,189 19 10
To Superannuation and Insurance Fund:—			
Amount set aside in accordance with Declaration of Trust of July 26, 1911		£ s. d. 9,171 5 0	
Less: Depreciation of Consols at time of conversion	£ s. d. 1,837 18 4		
„ Cost of conversion	256 3 0	2,094 1 4	
			7,077 3 8
Income Tax payable on War Stock Interest			223 9 8
Accumulations to December 31, 1919			724 18 0
			£8,025 11 4

		£ s. d.
By 5,560*l.* 17*s.* 8*d.* 5% War Stock (1929-1947) received under the conversion rights for 5,282*l.* 17*s.* 6*d.* 4½ % War Stock (*Value on December* 31, 1919, at 91⅝=5,095*l.* 3*s.* 2*d.*)		5,282 17 6
		5,282 17 6
By 1,140*l.* Metropolitan Water A Stock at cost (*Value on December* 31, 1919, at 56¼=641*l.* 5*s.* 0*d.*)		998 1 0
By amount included in the Society's Sundry Creditors' Account:—		
Fund uninvested	£ s. d. 1 19 0	
Accumulated income	189 19 10	191 18 10
		£1,189 19 10
By Investments in names of Trustees of Superannuation and Insurance Funds, viz.:—		
7,449*l.* 12*s.* 4*d.* 5 % War Stock (1929-1947) received under the conversion rights for 7,077*l.* 3*s.* 8*d.* 4½ % War Stock (*Value on December* 31, 1919, at 91⅝=6,825*l.* 10*s.* 7*d.*		7,077 3 8
443*l.* 3*s.* 11*d.* West Australian 3½% Stock (1935-1955) at cost (*Value on December* 31, 1919, at 66½=294*l.* 14*s.* 6*d.*)		359 17 4
198*l.* 16*s.* 9*d.* Queensland 3½% Stock (1950-1970) at cost (*Value on December* 31, 1919, at 64 =127*l.* 5*s.* 1*d.*)		162 11 1
Cash at Bank		425 19 3
		£8,025 11 4

Examined, audited, and found correct, this 26th day of February, 1920.

JONAS M. WEBB,
H. J. GREENWOOD, } *Auditors on behalf of the Society.*

THOMAS McROW, *Secretary.*
DELOITTE, PLENDER, GRIFFITHS & CO., *Accountants.*

[Copies of the full Report of any of the Council Meetings held during the year 1919 may be obtained on application to the Secretary, at 16 Bedford Square, London, W.C.1.]

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

Minutes of the Council.

WEDNESDAY, FEBRUARY 5, 1919.

The Hon. CECIL T. PARKER (President) in the Chair.

Present:—*Trustees.*—Mr. C. Adeane, C.B., Sir J. B. Bowen-Jones, Bart., the Earl of Coventry, Sir Gilbert Greenall, Bart., C.V.O., Lord Moreton, the Earl of Northbrook, and Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. Percy Crutchley, the Right Hon. Sir Ailwyn E. Fellowes, K.C.V.O., Mr. R. M. Greaves, Mr. Ernest Mathews, the Duke of Portland, K.G., the Earl of Powis, Mr. Frederick Reynard, Mr. C. Coltman Rogers, and Lt.-Col. E. W. Stanyforth.

Other Members of the Council.—Mr. D. T. Alexander, Major Clive Behrens, Mr. H. Dent Brocklehurst, Mr. Davis Brown, Mr. U. Roland Burke, Mr. Richardson Carr, Mr. W. W. Chapman, the Hon. J. E. Cross, Mr. J. T. C. Eadie, Mr. A. E. Evans, Mr. John Evens, Mr. James Falconer, Mr. W. Fitzherbert-Brockholes, Capt. W. H. France-Hayhurst, Mr. Robert Gray, Lord Harlech, Mr. Arthur Hiscock, Mr. R. W. Hobbs, Mr. John Howard Howard, Mr. W. F. Ingram, Col. C. Venables Llewelyn, Mr. J. L. Luddington, Mr. Alfred Mansell, Earl Manvers, Mr. Christopher Middleton, Mr. G. Norris Midwood, Mr. W. A. Mount, M.P., Mr. John Myatt, Capt. R. Oliver-Bellasis, Mr. Henry Overman, Mr. R. G. Patterson, Mr. H. F. Plumptre, Mr. F. Hamlyn Price, Mr. G. G. Rea, Mr. Fred Smith, Mr. C. Howard Taylor, Mr. C. W. Tindall, Mr. A. P. Turner, and Col. E. V. V. Wheeler.

The following members of the Cardiff Local Committee were also present: Mr. Edward Akers, Mr. Hubert Alexander, Mr. William Emerson, Alderman Illtyd Thomas, and Mr. J. L. Wheatley.

The minutes of the last meeting of the Council, held on Wednesday, December 11, 1918, were taken as read and approved.

Col. E. Curre, Itton Court, Chepstow, Mon., Mr. A. R. Fish, Holm-mead, Hutton, Preston, Mr. James C. Gould, M.P., Tee-to-maen, St. Mellons, Cardiff, Mr. W. H. P. Leslie, Bryn Tanat, Llansantffraid, Mont., Mr. Dennis N. Midwood, The Grange, North Rode, Congleton, and Mr. W. G. Millar, Bampton, Oxon, were elected Governors, and 82 duly nominated candidates were admitted into the Society as Members.

Mr. ADEANE, in moving the adoption of the Report of the Finance Committee, said that the only paragraph to which he need refer was the one relating to the Grant to the Woburn Committee. The Finance Committee had considered the matter very carefully, and had thought it very desirable to provide more working capital for the farm. It was believed that with payment of the overdraft of 300*l.* and the provision of 1,000*l.* for working capital the immediate needs would be met.

Mr. LUDDINGTON expressed the gratification which it would afford the Woburn Committee to learn of this Grant. The Committee had worked at a great disadvantage owing to insufficiency of capital for some time, and it would be a great relief to them to have this financial aid, with which he had no doubt they would be able to carry on the farm to the advantage of the Society.

The Report of the General Cardiff Committee was adopted, on the motion of the PRESIDENT, who remarked that the proposals with regard to the Entertainments Tax, if carried into effect, would constitute a serious burden.

Sir JOHN THOROLD, before moving the adoption of the Report of the Journal and Education Committee, asked the Council to agree to a vote of thanks to Mr. Hamlyn Price for his services in bringing out the Catalogue. The work had occupied a great deal of time, but the Catalogue would prove of the greatest value.

Mr. ADEANE seconded, and said that unless Mr. Price had undertaken this task he believed it would never have been carried out so successfully.

The vote of thanks having been carried unanimously, Mr. PRICE offered his thanks to the Council for so warmly accepting the motion, and said what little he had done had been a labour of love, and he was more than rewarded by the resolution.

Mr. ROGERS moved the adoption of the Report of the Botanical and Zoological Committee, and expressed his great regret and that of the Committee that they had been obliged to abandon the Plantations Competition in connection with the forthcoming Show; but in the light of the information and opinions they had obtained, there was no other course open to them.

Sir JOHN THOROLD moved that the Council nominate Sir J. B. Bowen-Jones, Bart., as President of the Society, for the ensuing year. They were all aware of the valuable and long services which he had rendered to the Society in every department of its operations and as a Trustee, and they felt sure that his election would meet with the hearty approval and pleasure of every Member of the Society. (Hear, hear, and applause.)

Mr. ADEANE seconded the motion, remarking that the acceptance of the Presidency by Sir Bowen Bowen-Jones would be universally welcomed.

The motion was carried with acclamation.

Sir BOWEN BOWEN-JONES, in reply, said that if he did not express all that he felt of gratitude to the Council for their nomination of him, he could assure them that his thanks were very sincere, and he was most grateful for the honour they had offered him. During a long life he had received very many favours from his brother agriculturists, and on two or three occasions honours had been bestowed upon him either by them or through them. But he should always feel, if elected, that no greater honour or distinction had ever been conferred upon him than the Presidency of their great National Agricultural Society, with which he had been intimately connected for a period of more than 50 years.

Sir JOHN THOROLD said a letter had been received from the Board of Agriculture and Fisheries inviting the Society to nominate one Member to serve on the Council of the National Institute of Agricultural Botany. He understood that Mr. Overman would be willing to carry out the duties, and accordingly he moved that Mr. Overman should be appointed. This was seconded by Sir GILBERT GREENALL, and carried unanimously.

The PRESIDENT intimated that Col. Venables Llewelyn, a newly-elected Member of Council representing South Wales, and Mr. Howard Taylor, representing the West Riding of Yorkshire, were present, and on behalf of the Council he offered them a hearty welcome.

The SECRETARY read the following letter from His Majesty the King in reply to the resolution of the Council passed at the last meeting congratulating His Majesty on the conclusion of the Armistice:—

Home Office,
Whitehall, S.W.
January 1, 1919.

SIR,—I am directed by the Secretary of State to inform you that the congratulatory address from the Council of the Royal Agricultural Society of England on the signing of the armistice has been laid before the King, and that His Majesty was pleased to receive the same very graciously.

I am, Sir, your obedient servant,
(signed) A. J. EAGLESTON.

The Secretary,
Royal Agricultural Society of England,
16, Bedford Square, W.C.1.

The DUKE OF PORTLAND, on behalf of the Agricultural Relief of Allies Committee, moved the following resolution :—

> "That, as the devastated areas in France, Belgium, and Serbia have now been evacuated, and as the Agricultural Relief of Allies Committee has commenced its relief operations in those countries, it is desirable that the Fund now at the disposal of the Committee should be at once augmented, in order that adequate first aid relief may be given. That, as the Agricultural Relief of Allies movement was initiated by the Royal Agricultural Society of England, it is incumbent on the Society to do all in its power to support it, and the Council urges the Members of the Society to meet and form committees where no organisation exists, and to promote in every way the scheme which was started by the Society itself.

The resolution, seconded by the EARL OF NORTHBROOK, was carried unanimously.

The PRESIDENT announced the election of Lord Henry Bentinck, M.P., as Member of the Council for the Division of Westmorland.

WEDNESDAY, MARCH 5, 1919.

SIR J. B. BOWEN-JONES, Bart. (President), in the Chair.

Present :—*Trustees.*—Mr. C. Adeane, C.B., Col. Cornwallis, the Earl of Coventry, Sir Gilbert Greenall, Bart., C.V.O., Lord Moreton, the Earl of Northbrook, and the Hon. C. T. Parker.

Vice-Presidents.—Mr. Percy Crutchley, the Rt. Hon. Sir Ailwyn E. Fellowes, K.C.V.O., Mr. R. M. Greaves, Mr. Ernest Mathews, the Duke of Portland, K.G., Mr. Frederick Reynard, Mr. C. Coltman Rogers, and Lt.-Col. E. W. Stanyforth.

Other Members of the Council.—Lord Henry Bentinck, M.P. Mr. Davis Brown, Mr. U. Roland Burke, Mr. W. W. Chapman, the Hon. J. E. Cross, Col. Edward Curre, Mr. John Evens, Mr. James Falconer, Mr. W. Fitzherbert-Brockholes, Mr. Robert Gray, Sir A. G. Hazlerigg, Bart., Mr. Arthur Hiscock, Major Dunbar Kelly, Major G. R. Lane-Fox, M.P., Col. C. Venables Llewelyn, Mr. Alfred Mansell, Mr. Christopher Middleton, Mr. G. Norris Midwood, Capt. R. Oliver-Bellasis, Mr. Henry Overman, Mr. R. G. Patterson, Mr. H. F. Plumptre, Mr. F. Hamlyn Price, Lord Ranksborough, C.V.O., C.B., Mr. Andrew Rogers, and Capt. J. Bell White, R.N.R.

The following member of the Cardiff Local Committee was also present : Alderman Illtyd Thomas.

The minutes of the last meeting of the Council, held on Wednesday, February 5, 1919, were taken as read and approved.

Mr. Charles Comins, Wilby Hall, Suffolk, Mr. William Graham, Eden Grove, Penrith, Mr. Oswald Harrison, Coates Manor, Cirencester, the Duke of Northumberland, Alnwick Castle, Northumberland, and Mr. Jeffreys Preston-Jones, Rushbury, Winchcombe, Glos., were elected as Governors, and 56 duly nominated candidates were admitted into the Society as Members.

Professor Sir John McFadyean, M.B., B.Sc.

On taking the Chair for the first time, Sir BOWEN BOWEN-JONES thanked the Council for the honour they had conferred upon him in making him their President. He also asked them to extend towards him their support and assistance in the conduct of the business of the Council during his year of office.

The Report of the Finance Committee was received and adopted. Mr. ADEANE presented the accounts for 1918, and Estimates of Receipts and Expenditure for 1919, which were approved.

On the presentation of the Report of the Veterinary Committee, a discussion arose as to the continued prevalence of Sheep Scab, in which the following took part :—Mr. MANSELL, LORD NORTHBROOK, Mr. DAVIS BROWN, and Sir JOHN McFADYEAN. The following resolution moved by Mr. MANSELL, seconded by Mr. COLTMAN ROGERS, was eventually passed :—

> "That the Council are of opinion that the time has arrived when more drastic steps should be taken to eradicate Sheep Scab, and that a deputation be appointed to wait upon the President of the Board of Agriculture on the subject."

It was also agreed that the deputation should consist of Lord Northbrook, Mr. Mansell, Mr. Davis Brown and Mr. Hobbs.

The **President** said they had the pleasure of having amongst them for the first time Lord Henry Bentinck, M.P., the new representative for Westmorland, and on behalf of the Council he tendered him a very hearty welcome. **Lord Henry Bentinck** briefly thanked the Council for their courtesy.

Mr. **Adeane** presented a Report from the War Emergency Committee. A discussion then ensued with regard to the serious difficulty arising from the scarcity of labour on the farm; and it was decided, on the motion of Mr. **Falconer**, seconded by Mr. **Mansell**, that a deputation should be appointed from the Council to present this matter to the Government, that the deputation should co-operate with those appointed by other bodies, and that the Society's representatives should be Mr. Falconer, Major Lane-Fox, M.P., and Mr. Davis Brown.

The **President** reported that the resolution passed by the Council at their last meeting on behalf of the Agricultural Relief of Allies Fund had so far brought in subscriptions to the amount of 218*l.*

Mr. **Midwood** said it would probably interest the Council to know that, after clearing up the accounts of the dinner to county secretaries and others organised by the Council and the Executive of the Agricultural Relief of Allies Committee, there was a credit balance of 43*l.* 17*s.* 11*d.*, which would go to the Fund.

WEDNESDAY, APRIL 2, 1919.

Sir J. B. Bowen-Jones, Bart. (President), in the Chair.

Present:—*Trustees.*—Mr. C. Adeane, C.B., Col. Cornwallis, the Earl of Coventry, Sir Gilbert Greenall, Bart., C.V.O., the Earl of Northbrook, the Hon. C. T. Parker, and Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. Percy Crutchley, Mr. R. M. Greaves, Mr. Ernest Mathews, the Duke of Portland, K.G., Mr. Frederick Reynard, Mr. C. Coltman Rogers, and Lt.-Col. E. W. Stanyforth.

Other Members of the Council.—Mr. D. T. Alexander, Mr. T. L. Aveling, Mr. Henry Dent Brocklehurst, Mr. Davis Brown, Mr. U. Roland Burke, Mr. Richardson Carr, Mr. W. W. Chapman, the Hon. J. E. Cross, Col. Edward Curre, Mr. John Evens, Mr. James Falconer, Mr. W. Fitzherbert-Brockholes, Sir Howard Frank, K.C.B., Sir Walter Gilbey, Bart., Mr. Robert Gray, Lord Harlech, Mr. Joseph Harris, Mr. William Harrison, Sir A. G. Hazlerigg, Bart., Sir Charles V. Knightley, Bart., Major G. R. Lane-Fox, M.P., Col. C. Venables Llewelyn, Mr. J. L. Luddington, Mr. Alfred Mansell, Earl Manvers, Mr. Christopher Middleton, Mr. G. Norris Midwood, Mr. W. A. Mount. M.P., Capt. R. Oliver-Bellasis, Mr. H. F. Plumptre, Mr. F. Hamlyn Price, Lord Ranksborough, C.V.O., C.B., Mr. G. G. Rea, Mr. Fred Smith, Mr. C. Howard Taylor, Col. Wheeler, and Capt. J. Bell White, R.N.R.

Governors.—Mr. William Graham and Mr. Bowater Vernon.

The following members of the Cardiff Local Committee were also present: Mr. Hubert Alexander, Alderman Illtyd Thomas, and Mr. J. L. Wheatley (Town Clerk).

The minutes of the last meeting of the Council held on Wednesday, March 5, 1919, were taken as read and approved.

Mr. Montague D. Bannister, Buntinghill, Cuckfield, Mr. Robert Marshall, Mains of Kilmaronock, by Alexandria, Dumbartonshire, and Mr. F. Carlyle Mitchell, Wadebridge, Cornwall, were elected as Governors and 53 duly nominated candidates were admitted into the Society as Members.

The **President** stated that, in response to the letter he had forwarded to Members asking for donations to the Agricultural Relief of Allies Fund, he had, up to date, received the sum of 906*l.* 4*s.* 6*d.* He had also received a letter from the British Friesian Cattle Society explaining that they hoped to organise gift sales in various parts of the country to help the Fund. The letter having been read, it was handed over to the Earl of Northbrook, as Chairman of the Executive Committee of the Fund.

Mr. ROGERS, in moving the adoption of the Botanical and Zoological Committee's Report, said the question of holding a woodland competition in connection with the forthcoming Show had been reconsidered. The Royal English Arboricultural Society had insisted very strongly upon the desirability of such a competition, because the Show would be in a district connected essentially with the production of pit props. They could not expect to get anything like the competition they had had in previous years, but it was thought that they should do as much as they could in the direction of encouraging replanting.

Mr. ADEANE presented a Report from the War Emergency Committee. Since the last Council Meeting that Committee had passed one resolution, which was in the following terms :—

> "That the Committee strongly deprecate any permanent State or Municipal control of milk, believing that such control will discourage production."

At their previous meeting Mr. ADEANE said two resolutions had been passed—one with regard to cereal prices and cost of production and one with regard to the potato crop. With regard to cereal prices and cost of production, since they last met wages had been fixed, and so had prices. The Agricultural Wages Board, in March, 1918, appointed a Committee "to enquire into the financial results of the occupation of agricultural land and the cost of living of rural workers." The Report of that Committee had more or less been the basis of the prices and wages fixed. Every Member of Council should be in possession of that Report, and should thoroughly master it, as it was a matter they would have to go into. With regard to potatoes he believed that certain official assurances had been received since their resolution had been passed, and he understood that the matter had been discussed by the Advisory Council, upon which body they had delegates, one of whom was Mr. John Evens, who was prepared to make a statement on the subject.

Mr. EVENS then explained the action he had taken and what had transpired at the meeting of the Central Agricultural Advisory Council. Neither the Ministry of Food nor the Exchequer, he stated, desired to repudiate liability for the loss, and local committees were being set up to assess this loss.

It was agreed, on the motion of Mr. ADEANE, that the Report of the Agricultural Wages Board Committee he had referred to, be circulated to all Members of the Council.

Mr. FALCONER made a Report as to the proceedings on the occasion of the reception by the Minister of Agriculture and Minister of Labour of the Deputation appointed at the last meeting of the Council.

A formal request, signed by ten Governors or Members, was received for the dismissal from the Society of a Member under the terms of By-law 16. This request was placed in a conspicuous part of the Council Room, and a copy thereof ordered to be transmitted by post to the Member in question.

WEDNESDAY, MAY 7, 1919.

Sir J. B. BOWEN-JONES, Bart. (President), in the Chair.

Present :—*Trustees.*—Mr. C. Adeane, C.B., Col. Cornwallis, Sir Gilbert Greenall, Bart., C.V.O., Lord Middleton, the Earl of Northbrook, the Hon. C. T. Parker, and Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. Percy Crutchley, Mr. R. M. Greaves, Mr. Ernest Mathews, Mr. Frederick Reynard, Mr. C. Coltman Rogers, Lt.-Col. E. W. Stanyforth, and the Earl of Yarborough.

Other Members of the Council.—Mr. D. T. Alexander, Mr. T. L. Aveling, Major Olive Behrens, Mr. U. Roland Burke, Mr. Richardson Carr, Mr. W. W.

Chapman, the Hon. J. E. Cross, Mr. John T. C. Eadie, Mr. W. Fitzherbert-Brockholes, Capt. W. H. France-Hayhurst, Lord Harlech, Mr. Joseph Harris, Mr. Arthur Hiscock, Col. C. Venables Llewelyn, Mr. Christopher Middleton, Mr. G. Norris Midwood, Mr. W. A. Mount, M.P., Capt. R. Oliver-Bellasis, Mr. A. W. Perkin, Mr. H. F. Plumptre, Mr. F. Hamlyn Price, Mr. Andrew Rogers, Capt. Percy W. Seward, Mr. Fred Smith, Lord Strachie, Mr. C. W. Tindall, Mr. A. P. Turner, and Capt. J. Bell White, R.N.R.

Governors.—Capt. Sir Beville Stanier, Bart., M.P., Mr. W. F. Holt Beever, Mr. William Graham and Mr. Bowater Vernon.

The following members of the Cardiff Local Committee were also present: The Lord Mayor of Cardiff, Mr. Edward Akers. Mr. Hubert Alexander, Alderman Illtyd Thomas, and Mr. J. L. Wheatley (Town Clerk).

The PRESIDENT, before proceeding with the ordinary business, announced that H.R.H. the Prince of Wales would pay the Society a visit to the Cardiff Show. He added that he was sure that not only Members of the Council, but the whole body of Members of the Society would rejoice at the fact that it would be possible for the Prince of Wales to spare the time for a visit to the Show, and that His Royal Highness could not receive a heartier welcome than that which would be accorded to him by the agriculturists of Wales and others attending the Show. (Hear, hear.)

The minutes of the last meeting of the Council, held on April 2, were taken as read and approved.

Mr. W. H. Cullen, Mickleham Downs. near Dorking, Mr. Henry G. Lewis, Porthkerry. Barry, Glam., Mr. George V. Parker, Skermorlie, Newport, Mon., and the Right Hon. Viscount Wimborne, Ashby St. Ledgers, Northants, were elected as Governors, and 72 duly nominated candidates were admitted into the Society as Members.

The Mayor and Town Clerk of Darlington attended the meeting, and, on behalf of their Town Council extended a hearty invitation to the Society to hold the Show in 1920 at Darlington.

On the motion of the PRESIDENT, seconded by Col. STANYFORTH, it was unanimously resolved:

> "That the Council accept with thanks the invitation that has been given by the Mayor of Darlington for the Show to be held in that town in 1920, and that the Hon. Director be requested to visit the sites referred to with a view to the selection of the site best adapted to the requirements of the Society."

Lord NORTHBROOK, in presenting the Veterinary Committee's Report, expressed regret that the Deputation to Lord Ernle on the subject of Sheep Scab had not had a more satisfactory result. Lord STRACHIE suggested that if Lord Northbrook would bring up the question in the House of Lords, a more satisfactory answer might be obtained.

The Report of the Stock Prizes Committee was received and adopted, including a recommendation that a Member be dismissed from the Society under By-Law 16. A formal resolution to this effect was unanimously passed by the Council.

Lord STRACHIE moved the following resolution:

> "That this Council is strongly opposed to the variation in the price of milk to producers in different counties whereby the counties of Somerset, Devon, Dorset and Cornwall are penalised by the reduction of 2*d*. a gallon."

Mr. FRED SMITH seconded the resolution, which was adopted.

On the motion of Mr. ADEANE, seconded by the PRESIDENT, it was resolved:

> "That the Council have received with much regret the resignation of Mr. Robert W. Hobbs, who has represented Oxfordshire on the Council for 16 years, and desire to record their thanks to Mr. Hobbs for his services as one of the Society's representatives on the Agricultural Wages Board."

WEDNESDAY, JUNE 4, 1919.

Sir J. B. Bowen-Jones, Bart. (President), in the Chair.

Present:—*Trustees.*—Mr. C. Adeane, C.B., Col. Cornwallis, the Earl of Coventry, Lord Moreton, the Earl of Northbrook, the Hon. C. T. Parker and Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. Ernest Mathews, Mr. Frederick Reynard, Lt.-Col. E. W. Stanyforth, and the Earl of Yarborough.

Other Members of the Council.—Mr. H. Dent Brocklehurst, Mr. U. Roland Burke, Mr. Richardson Carr, Mr. W. W. Chapman, the Hon. J. E. Cross, Mr. John Evens, Mr. W. Fitzherbert-Brockholes, Mr. Robert Gray, Lord Harlech, Mr. Joseph Harris, Mr. W. Harrison, Sir A. G. Hazlerigg, Bart., Mr. Arthur Hiscock, Sir Charles V. Knightley, Bart., Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. Christopher Middleton, Mr. Henry Overman, Mr. F. Hamlyn Price, Mr. Andrew Rogers, Mr. John Rowell, Lord Strachie, Mr. C. Howard Taylor, Mr. C. W. Tindall, and Capt. J. Bell White, R.N.R.

Governors.—Capt. Sir Beville Stanier, Bart., M.P., Mr. W. F. Holt Beever, and Mr. William Graham.

The following members of the Cardiff Local Committee were also present:—The Lord Mayor of Cardiff, Mr. Edward Akers, Mr. Hubert Alexander, Alderman Illtyd Thomas, and Mr. J. L. Wheatley (Town Clerk).

The minutes of the last meeting of the Council held on May 7, were taken as read and approved.

The following were elected as Governors:—Mr. George H. Drummond, 49 Charing Cross, S.W., Mr. David G. Hall, Imperial Buildings, Bute Docks, Cardiff, Mr. J. W. Holland, 21 Newton Street, Manchester. Sir Lewes T. Loveden Pryse, Bart., Gogerddan, Bow Street, Cardiganshire, Mr. Wyndham I. Radcliffe, Druidstone. Michaelston-y-Vedw, near Cardiff, Lt.-Col. Henry Ramsden, Shallcross Hall, Whaley Bridge, Derbyshire, Viscountess Rhondda, Llanwern Park, Newport, Mon., Mr. F. Harold Turnbull, The Heath, Cardiff, Mr. William B. Whigham, Fulmer Court, Stoke Poges, Bucks.; and 174 duly nominated candidates were admitted into the Society as Members.

The Report of the Finance Committee was received and adopted; and on the motion of Mr. Adeane, seconded by Sir John Thorold, it was resolved:

> "That the Secretary be empowered to issue to any duly nominated candidate for membership of the Society on receipt of the annual subscription, a badge admitting the candidate to the same privileges as a Member during the forthcoming Show at Cardiff; the formal election of such candidate to be considered by the Council at their next ordinary meeting."

In presenting the Report of the Journal and Education Committee—which was received and adopted—Sir John Thorold said the Committee regretted extremely that the Journal had been delayed in printing. The matter had been in the hands of the printers since the beginning of the year, and altogether things had been more forward than formerly. It looked, however, as if the issue of the volume would be later than ever before. The Committee had thought it their duty to take the question of the printing into their serious consideration, and a small Committee would consider the matter before the recess.

Mr. Luddington, in presenting the Report of the Chemical and Woburn Committee, formally moved that the Council meeting on July 30 be held at 10 a.m. instead of 11, in view of the annual visit of the Council to the Woburn Experimental Farm. With regard to the adulteration cases, it was proposed, he said, to give full particulars, and also, where possible, the names of the vendors. That was, he thought, the wish of the Council, and the Committee proposed to adopt that course in the next issue of "Occasional Notes."

Mr. Overman drew attention to the Animals Anaesthetics Bill, now before the House of Commons, and moved:

"That this Council disapprove entirely of the Animals Anæsthetics Bill now before Parliament, and protest against it in the interests of breeders of horses and live stock and all agriculturists. They ask for the rejection of the Bill, which they consider unnecessary and injurious to those they represent."

This was seconded by Mr. TINDALL, and after discussion, carried unanimously.

The SECRETARY read a letter from the Ex-Member dismissed from the Society at the last meeting of the Council. It was unanimously decided that no action be taken thereon.

On the motion of Mr. TINDALL, seconded by the Earl of NORTHBROOK, it was resolved:

"That a meeting be held in the Cardiff Showyard at 4.30 p.m. on Tuesday, June 24, which representatives from the Breed and Principal Agricultural Societies of Great Britain and Ireland should be invited to attend, to consider the question raised by the City Corporation as to the removal of the existing restrictions on the importation of store cattle into Great Britain."

The LORD MAYOR OF CARDIFF, as Treasurer of the Local Fund, handed in a cheque for 2,000*l*., the amount agreed upon between the Society and the Corporation, and another for 900*l*. as a first instalment of the local prize fund. He could assure the Council that they in Cardiff were very keen on the Show, and very desirous that it should be the great success the Council themselves wished. He was sure the people of Cardiff and the neighbourhood would do all they could to accomplish this.

The PRESIDENT, in acknowledging these cheques, referred also to one for ten guineas from the Lord Mayor in respect of the two special prizes he was offering for the best male and best female animal in the Welsh cattle classes. The Council desired to thank his lordship for all his efforts to make the Show a success.

Mr. ADEANE reported that the War Emergency Committee had passed the following resolution:

"That the Committee re-affirm their resolution passed on April 1, strongly deprecating any *further* permanent control of milk, believing that such control will discourage production."

Mr. ADEANE said he had noticed that Lord Strachie had a resolution on the agenda paper dealing with the same subject. He had had a conversation with Lord Strachie, and he understood that his lordship would speak on the resolution of the Emergency Committee, and withdraw that of which he had given notice. The Committee did not wish it to be inferred that they were opposed to the control of milk in so far as it was provided for in the Milk and Dairies (Consolidation) Act, 1915. That Act if put into operation should ensure the public receiving a healthy supply of milk. The Committee, however, were strongly opposed to anything in the nature of the nationalisation or municipalisation of the milk industry, and any proposals to that effect would receive the most strenuous opposition of agriculturists throughout the country. During the war agriculturists had submitted to all sorts of control in the public good, but now that the war was over the agricultural policy should be to get rid of this bureaucratic control. (Hear, hear.)

Lord STRACHIE assented to Mr. Adeane's suggestion: in fact, he thought the resolution passed by the Committee better than the one he had put on the agenda, which only dealt with the Milk Producers' Council Scheme P. That scheme was simply put out by the Ministry of Food as a kite to find out what was the feeling of agriculturists on the matter. He strongly objected to the scheme, because for all practical purposes it would set up a Government department.

The SECRETARY reported that the Trustees of the Queen Victoria Gifts Fund had decided to make a grant of 140*l*. to the Royal Agricultural Benevolent Institution for the year 1919, to be distributed as follows:—Three grants of 10*l*. each to male candidates, three grants of 10*l*. each to married couples, and eight grants of 10*l*. each to female candidates.

WEDNESDAY, JUNE 25, 1919.

HELD IN THE CARDIFF SHOWYARD.

Sir J. B. BOWEN-JONES, Bart. (President), in the chair.

Present:—*Trustees.*—Mr. Charles Adeane, C.B., the Earl of Coventry, Lord Middleton, the Earl of Northbrook, the Hon. Cecil T. Parker, Sir John H. Thorold, Bart.

Vice-Presidents.—The Right Hon. Sir Ailwyn E. Fellowes, K.C.V.O., Mr. R. M. Greaves, Mr. C. Coltman Rogers, Lt.-Col. E. Wilfrid Stanyforth.

Other Members of the Council.—Mr. D. T. Alexander, Mr. T. A. Buttar, Mr. W. W. Chapman, Col. E. Curre, Lord Harlech, Mr. J. Howard Howard, Major Dunbar Kelly, D.S.O., Col. C. Venables Llewelyn, Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. Christopher Middleton, Mr. John Myatt, Mr. Fred Smith, Mr. C. W. Tindall, Capt. J. Bell White, R.N.R., Capt. T. L. Wickham-Boynton, the Right Hon. Frederick Wrench.

The minutes of the last monthly meeting of the Council held on Wednesday, June 4, were taken as read and approved.

On the motion of Sir JOHN THOROLD, seconded by the Hon. CECIL T. PARKER, it was unanimously resolved, "That H.R.H. the Prince of Wales, K.G., be elected a Trustee of the Society."

In presenting the Report of the Implement Committee, Mr. GREAVES said he understood that there were nine or ten different associations all going into the question of the amendment of the Law regarding Tractors on Highways, and it was thought that probably the best plan would be to try to make one strong committee under the ægis of the Society. The three bodies mentioned in the Report covered the whole of the ground, and the suggestion put forward was that each should nominate three Members to be co-opted on the Implement Committee to go thoroughly into the matter. He ought, he said, to point out that legal opinions would be required and expense would be incurred, so that he thought the matter had better be referred to the Finance Committee.

Mr. ADEANE, speaking as Chairman of the Finance Committee, said that if the Council agreed to the principle, the Committee would, he thought, have to find the money.

On the motion of the Hon. CECIL T. PARKER, seconded by Mr. ALFRED MANSELL, it was resolved: "That the best thanks of the Society are due and are hereby tendered to—

1. The officials of the General Post Office for the efficient postal arrangements.
2. The Chief Constable of Cardiff for the efficient police arrangements.
3. The Glamorganshire Branch of the British Red Cross Society and the Priory for Wales of the Order of the Hospital of St. John of Jerusalem for the efficient ambulance arrangements made by them in connection with the Show.
4. Messrs. Barclay & Co., Ltd., for the efficient services rendered by their officials.
5. Messrs. Merryweather & Sons, Ltd., for the provision of fire appliances and for the efficient arrangements in connection with the Fire Station in the Showyard.
6. Messrs. James Howell & Co., for decorating and furnishing the Royal Pavilion.
7. Messrs. W. Treseder, Ltd., for providing floral decorations near the pavilion.
8. Messrs. H. & W. Evans, for providing floral decorations in the Showyard.

Letters of thanks were also ordered to be sent to various other individuals and firms for assistance kindly rendered and for the loan of articles for the purposes of the Show.

Proceedings at the General Meeting of Governors and Members,

HELD IN THE
LARGE TENT IN THE SHOWYARD AT CARDIFF.

WEDNESDAY, JUNE 25, 1919.

Sir J. B. BOWEN-JONES, Bart. (PRESIDENT), IN THE CHAIR.

Present:—*Trustees.*—H.R.H. the Prince of Wales, K.G., Mr. Charles Adeane, C.B., Col. F. S. W. Cornwallis, the Earl of Coventry, Sir Gilbert Greenall, Bart., C.V.O., Lord Middleton, the Earl of Northbrook, the Hon. Cecil T. Parker, Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. Percy Crutchley, the Right. Hon. Sir Ailwyn E. Fellowes, K.C.V.O., Mr. R. M. Greaves, Mr. Charles Coltman Rogers, Lieut.-Col. E. Wilfrid Stanyforth.

Other Members of the Council.—Mr. D. T. Alexander, Mr. U. Roland Burke, Mr. T. A. Buttar, Major Clive Behrens, Mr. H. Dent Brocklehurst, Mr. W. W. Chapman, the Hon. John E. Cross, Col. Edward Curre, Mr. John Evens, Mr. James Falconer, Mr. Robert Gray, Lord Harlech, Mr. Joseph Harris, Mr. William Harrison, Sir Arthur G. Hazlerigg, Bart., Mr. Arthur Hiscock, Mr. J. Howard Howard, Major Dunbar Kelly, D.S.O., Col. C. Venables Llewelyn, Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. Christopher Middleton, Mr. G. Norris Midwood, Mr. John Myatt, Mr. John Rowell, Mr. Fred Smith, Mr. C. W. Tindall, Capt. J. Bell White, R.N.R., Capt. T. L. Wickham-Boynton, the Right Hon. Frederick Wrench.

The Lord Mayor of Cardiff, Lord Glanely, Mr. E. W. M. Corbett, Mr. Hubert Alexander, Alderman Illtyd Thomas, Mr. Edward Akers, Mr. William Emerson, with other Members of the General Cardiff Committee and the Marquess of Bute were present, and there was a large attendance of Governors and Members in the tent.

President's Remarks.

The **President**, in opening the meeting, said: May it please your Royal Highness, my Lord Mayor, my lords, ladies and gentlemen, before proceeding with the items of the agenda, I should like, for one moment, briefly to allude to the support and recognition that the Royal Family has always given to this Society. (Applause.) Each of our reigning sovereigns, since its institution in 1839, has been Patron of the Society. Furthermore, our revered Queen Victoria was President of the Society at the Great Windsor Show in 1889 and, previous to that, her husband, the Prince Consort, had been President of the Society in 1862, when the Show was held at Battersea. King Edward was a Member of the Council and a frequent attendant at its meetings. As Prince of Wales he was four times President of the Society—the first time at Manchester, in 1869; next at Kilburn, 1879; the third time at Norwich in 1886; and again, in 1900, at York. Then our Gracious Majesty King George was also a Member of Council, and acted as President, when Duke of York, in 1897, at Manchester; when Prince of Wales, at Park Royal, in 1903; and when King, at Norwich, in 1911. (Applause.)

His Royal Highness a Trustee.

And now, ladies and gentlemen, I have the gratification of announcing to you that His Royal Highness the Prince of Wales has consented to become a Trustee of the Society, and has been elected a member of the Council this morning. I ask you to show your approval of what has been done by unanimous acclamation. (Loud applause.) I now hand to the Prince his badge as a Member of Council, and I shall call upon His Royal Highness to move the next resolution.

H.R.H. THE PRINCE OF WALES, who was most enthusiastically received, said: Mr. President, my lords and gentlemen, I must thank you very much for having elected me as a Trustee of the Royal Agricultural Society and a Member of your Council. I feel this is a great privilege, and one that I very much appreciate. Although this is my first visit to the Royal Show, I can assure you that I shall always take the same interest in all your work that Queen Victoria, King Edward VII., and my father have done. (Applause.) I am very much impressed by the magnitude of the Show, and I am very glad to know that the entries, as regards live stock, are greater in number than at the last two shows during the war. It is a splendid thing for Wales that the Show is being held at Cardiff. After four and a half years of war there is naturally much that is backward as regards agriculture; there is much to pick up, and I know that the fact of the Show being held here will be a very great help. (Applause.)

Lord Mayor and Corporation Thanked.

Now I have to move the resolution: "That the best thanks of the Society are due and are hereby tendered to the Lord Mayor and Corporation of Cardiff for their cordial reception of the Society." I am sure you will all agree with me that you must be very grateful to the Lord Mayor and the Corporation. We know that they have put all their energy into making the Show a great success, and it is undoubtedly a very great success. I am very glad to see so many of our Overseas men here—(applause)—and to know that special arrangements have been made for sending over a thousand of them to attend the Show. It is a great opportunity for them to see the finest specimens of live stock in the United Kingdom. (Applause.)

I see Lord Glanely is with us to-day and I think we must all congratulate him on having won the Derby and for other recent successes. I hope you all backed Grand Parade. (Laughter.) I am afraid that I didn't. (Loud laughter.)

I thank you all very much for the splendid reception you have given me to-day. (Applause.)

The Hon. CECIL T. PARKER seconded the resolution, which was unanimously carried.

The LORD MAYOR OF CARDIFF said it was a distinguished honour that was conferred upon him that morning to be asked to respond to such a unanimous resolution as had just been adopted by the meeting. They in Cardiff were rejoicing with all the Members of the Society at the prospect of having a record result from the holding of the Royal Show there that week. It was the duty of the representative city of the whole of the Principality and the metropolis of Wales, as it was their privilege, to welcome all friends who came within their borders. (Applause.) Cardiff was noted for many things—for its shipping and for its coal—but it had also a good reputation for hospitality, and that, he trusted, would never be lost, but would be increased. They had great ambitions in Cardiff, but one of their greatest was that the Show might be the most successful in the history of the Society. (Applause.) He believed there were very good prospects of this ambition being realised. The education of the country had suffered during the years of war. Surely it was time they were doing all they could to reconstruct industries, and the greatest industry of the country was that of agriculture. (Applause.) If they as a Corporation had done something whereby they had approached that ideal, then they were satisfied, and he trusted the Members of the Society were also satisfied. He thanked them heartily for their resolution. (Loud applause.)

Thanks to Local Committee.

Sir GILBERT GREENALL had great pleasure in moving, "That the best thanks of the Society are due and are hereby tendered to the Cardiff Local Committee for their exertions to promote the success of the Show."

Very many members had no idea what that resolution comprised, and no idea of the work the Local Committee had to do in making arrangements to ensure the Show being a success. The Local Committee had always done their utmost for the success of the Show, but never before had so much work to be done in so short a time, and had it not been for the great help rendered by the members of the Cardiff Local Committee, the Show could never have been got ready in time. They had been very fortunate in having a man like Lord Glanely as Chairman of the Local Finance Committee, an old hand in Mr. Corbett, who was well known to everybody, and last but not least, one of the youngest members of the Committee, Mr. Hubert Alexander, who had worked very hard. Not only was he Steward of Forage, but they had looked to him to do all sorts of things and to find all sorts of men. In fact, they had caused him practically to neglect his business for the last six months: but his father was not so particular, as he was doing a good and noble work for the Society. (Applause.)

Mr. CHARLES ADEANE said that as one in whose year of office as President the Cardiff Show would have been held had it not been for the war, he had the greatest pleasure in seconding the resolution. As agriculturists they all owed a great debt to the Local Committees for what they had done. Nobody knew better than Sir Gilbert Greenall the vast amount of work put on those Committees.

The resolution was unanimously adopted.

Lord GLANELY, in acknowledging the vote, said that as Chairman of the Local Finance Committee, and on their behalf, he much appreciated the kind sentiments that had been uttered that day. The functions of the Local Finance Committee were by no means easy: indeed, there were many duties which could not be said to be pleasing. However, they had to be faced, and some one had to carry them out. He did not think the people of this country thoroughly realised how vital the agricultural industry was to the economic maintenance and stability of the nation, and it had, like many other matters of importance, only been made manifest during the war. He need not refer to the critical position of this country at the time when the submarine campaign was at its worst. It was then borne in upon them with great force and they were not likely to forget it. It would be criminal folly for the Government not to render every assistance possible to agriculture after the lesson they had been taught. Bearing those facts in mind, it was realised by the Local Committee that every effort must be put forward to make the visit of the Royal Agricultural Society the unqualified success it deserved to be. He need not go into the merits of the Society. Those present were well acquainted with its history. It was a very old-established institution, and every one recognised it as the premier agricultural society in the land. When in 1901 the Society last visited Cardiff, he understood that the total subscriptions received amounted approximately to 5,700*l.* He was happy to be able to state that, through the efforts of the Local Committee, they had for the present Show obtained between 9,000*l.* and 10,000*l.* He went further—and he was delighted to be able to say so—and stated that they had even surpassed Manchester's grand total. This position of affairs was, he thought, highly creditable to Cardiff and district, and it was evidence that if only the Government gave the lead there were agricultural organisations in the country—aye, and individuals too—who would render every support possible to make the position of agriculture not only safe but a credit to the country. (Applause.) No one could question the fact that this particular industry had in the past been neglected, but that policy must cease, and cease immediately. He felt confident that the Society's visit to Cardiff would constitute a record. It was a most happy coincidence, he thought, that the Prince of Wales should have paid a visit to Cardiff on this occasion. (Applause.) The citizens of Cardiff were extremely proud of their Prince, and on Thursday a ceremony would be performed which would bring His Royal Highness far nearer to them by being made an Honorary Freeman of Cardiff, which was, as they all recognised, the Metropolis of the Principality. He sincerely trusted that the visit of their Prince to Cardiff would hereafter afford him many happy moments of reflection. That he might be spared to pay many more visits to the City was the devout hope of the loyal and devoted people of Wales. (Applause.)

Lord Glanely's Gift.

He had referred to assistance being rendered to agriculture by individuals, and, in order to give a lead to others and practical evidence of his views, he was prepared, in order to commemorate the visit of H.R.H. the Prince of Wales to the City of Cardiff, and also to commemorate the holding of the Show in the city—the first Royal Show after the great Victory of England and her Allies in the European War—to provide an endowment fund for the purpose of setting up and maintaining a laboratory for research in questions relating to agriculture, for the University of Wales at Cardiff. (Loud applause.)

Railway Companies Thanked.

The Hon. J. E. **Cross** (Steward of Implements) said he had the greatest pleasure in moving "That the best thanks of the Society are due and are hereby tendered to the Railway Executive Committee and the Railway Companies for the facilities afforded by them in connection with the Show." They all knew the great difficulties the companies had had to contend with during the last four years, and still had to contend with, and how they had put their shoulder to the wheel. The efforts of the companies had surpassed their expectations, and as Members of the Royal Agricultural Society they could not thank them too much for the work done. Speaking for his own department, there were only one or two slight exceptions where implements had failed to come in by the proper time. The manner in which the live stock had been handled also deserved the Society's hearty thanks. He desired specially to refer to the Great Western and to the Taff Vale Companies. (Applause.)

Mr. **William Harrison**, in seconding, desired to endorse everything said by Mr. Cross with respect to the efficiency of the railways in bringing the machinery and live stock to the Show.

The resolution was carried unanimously.

Awards for Plantations.

The **Secretary** then read the following Report of the Judges in the Competition for Plantations in Glamorganshire, Breconshire, Cardiganshire, Carmarthenshire and Pembrokeshire:—

We are pleased to report that in spite of many obvious difficulties, the Plantations Competition, which of recent years has always been connected with the Show, has been a great success. In spite of the very heavy felling, particularly in South Wales, during the war, a very gratifying number of entries were received. Many of the plantations were extremely creditable to the estates, and the judges expressed their satisfaction and pleasure with the woods which they inspected. The competition was held in conjunction with the Royal English Arboricultural Society, and the Councils of the two societies desire to tender their thanks to the estates which entered, and for the support and help which they received from both owners and agents. The list of awards is as follows:—

PLANTATIONS COMPETITION, 1919.

AWARDS.

Plantations must not be of less than ten years' growth.

Stage A.—Plantations which have been weeded or lightly thinned, including the removal of dead or dying trees.

Stage B.—From the end of Stage A up to the completion of the second thinnings.

Classes 1 and 2.—Hardwoods as Final Crop, to be not less than 4 acres in extent.—No entries.

Class 3.—Conifers, to be not less than 4 acres in extent.—Stage A: First prize, silver medal, The Birmingham Corporation, Elan Estate, Rhayader, Brecon; second prize, bronze medal, Capt. H. A. Christy, Llangoed, Boughrood, Brecon.

Class 4.—Stage B (as above): First prize, silver medal, T. J. Waddingham, Esq., Hafod, Devil's Bridge, Cardiganshire; second prize, bronze medal, Lord Glanusk, C.B., D.S.O., Crickhowell, Breconshire.

Class 5.—Best example showing systematic management of existing woodland area, including the renovation and conversion of an unprofitable wood into a profitable condition: First prize, silver medal, The Exors. of the late Miss Talbot, Margam Estate Glamorganshire; second prize, bronze medal, the Earl of Lisburne, Crosswood Cardiganshire.

Class 6.—Plantations of not less than two acres, consisting of Douglas Fir, Sitka Spruce, Japanese Larch, Corsican Pine, or any other rarer conifer, pure or mixed, of not less than five or more than 30 years' growth: First prize, silver medal, Major J. M. Gibson Watt, Doldowlod, Rhayader, Brecon; second prize, bronze medal, the Earl of Plymouth, St. Fagans, Cardiff.

Class 7.—For the Best Managed Woodland Estate, not less than 1,000 acres in area: First prize, special medal, Lord Glanusk, C.B., D.S.O., Glanusk Park, Crickhowell; second prize, silver medal, Major J. M. Gibson Watt, Doldowlod, Rhayader; third prize, bronze medal, The Exors. of the late Miss Talbot, Margam.

Royal Arboricultural Society's Gold Medal for the Best Plantation: T. J. Waddingham, Esq., Hafod (Alltduhanog Plantation).

GOLD MEDAL FOR PITWOOD COMPETITION.

It is desired to call special attention to the generous offer of the Monmouthshire and South Wales Coalowners' Association of a gold medal to the value of 20*l.* to be given to the estate in the five counties which has made, in the opinion of the judges, the best contribution of Pitwood to the war. It is hoped to announce this award before the close of the Show. We regret the delay, owing to the number of entries.

W. H. BENNETT, ARCHIE P. LONG, Judges.

[It was subsequently announced that the gold medal of the South Wales Coalowners' Association had been awarded to the Earl of Lisburne, Crosswood, Cardiganshire.]

Members' Suggestions.

In response to an inquiry from the Chair as to whether any Governor or Member had any remark to make or suggestion to offer for the consideration of the Council.

Mr. **ELDRED G. F. WALKER** (Chew Stoke, Bristol) said that one thing that had struck him very much in passing up and down the country was the great scarcity of feeding stuffs. They had never had more cattle in the country and less with which to feed them. He considered it to be the duty of the Society to impress upon the Government the importance of restricting the export of millers' offals and other feeding stuffs and of keeping in reserve a sufficient supply for next winter. It was a very serious situation, and one with which the Council should deal. (Hear, hear.)

Mr. **ROBERT BRUFORD** (Nerrols, Taunton) drew attention to the excessive slaughtering of calves in the country, and suggested that it would be a far better way to augment the stock of cattle by restricting the killing of calves than by bringing in Canadian cattle and possibly foot-and-mouth disease with them.

The **PRESIDENT** assured these two gentlemen that the Council would give their suggestions the fullest consideration.

Thanks to Chairman.

Colonel **J. H. FORRESTER ADDIE**, C.B.E., moved a vote of thanks to the President for his services in the Chair. The President, as a near neighbour of his, had always been held up to him as one of the pioneers of agriculture, and, on the threshold of Peace, they could have had no one better in the office of President than Sir Bowen Bowen-Jones. He had much pleasure in moving that the heartiest thanks of the meeting be given him. (Applause.)

Mr. **ROBERT BRUFORD**, in seconding the motion, congratulated Sir Bowen on the grand Show in the midst of which they met that day. He also expressed the great pleasure it gave them all to see H.R.H. the Prince of Wales at the meeting. He congratulated His Royal Highness on his election as a Trustee and Member of the Council. They hoped soon to see him as President. (Applause.)

The **SECRETARY** then put the resolution, which was carried with acclamation.

The **PRESIDENT** thanked the Members from the bottom of his heart for the very cordial vote of thanks passed to him for his services. While it was yet premature to enter into a discussion as to the details of the Show, he thought that, on behalf of the Society, he might say that they were very much pleased and perfectly satisfied with the number of entries of live stock and implements exhibited on that occasion. The only other remark he would like to make was that it had given him the greatest satisfaction to welcome the thousand or more Overseas soldiers who were visiting the Show. (Loud applause.)

IMPORTATION OF STORE CATTLE.

A largely attended meeting of representatives of Agricultural and Breed Societies was held at 4.30 p.m. on Tuesday, June 24, 1919, in the Large Tent in the Cardiff Showyard, Sir J. B. Bowen-Jones, Bart. (President of the R.A.S.E.), in the chair. There were present, representing the R.A.S.E., the Earl of Coventry, the Earl of Northbrook, Lord and Lady Middleton, Mr. Alfred Mansell, Mr. C. W. Tindall, Col. E. W. Stanyforth, &c. In addition representatives attended from the principal Agricultural and Breed Societies in the country. Mr. W. P. Neal (a member of the Cattle Market Committee of the City of London) also attended.

Sir J. B. BOWEN-JONES, in opening the meeting, explained that it had been convened by the Royal Agricultural Society's Council in accordance with the wish expressed by the Corporation of the City of London that this question of the importation of Canadian cattle should be considered. The Council were of opinion that it was a matter of great importance, and that the views of the Breed Societies of the country should be obtained. Resolutions had been received from several of the Societies in favour of retaining the existing restrictions. There were present at the meeting representatives from all the principal Agricultural Societies and from almost every cattle, sheep and pig Breed Society. He was not going to express an opinion one way or the other, but would call on Mr. Tindall to address the meeting.

Mr. C. W. TINDALL said it had been his privilege a short time ago, in answer to the request from the City of London, to propose "that a meeting be held in the Cardiff Showyard at 4.30 p.m. on Tuesday, June 24, which the representatives from the Breed and principal Agricultural Societies of Great Britain and Ireland should be invited to attend, to consider the question raised by the City Corporation as to the removal of the existing restriction of the importation of store cattle into Great Britain."

This was a matter that had been brought forward from time to time for a great number of years. In 1892, following a deputation to the President of the Board of Agriculture, an Order was made under which cattle brought from North America should be subject to slaughter at the port of landing. In 1896 an Act of Parliament was passed securing the same object. It would be within the recollection of many of those present that the late Sir Jacob Wilson, the late Thomas Booth, and many others interested in cattle breeding, had been engaged almost daily for months in the House of Commons on this matter. At that time the health of the herds of the country was not as good as could be desired. Lately, however, as, they believed, the result of the Order and Act referred to, the country had been comparatively free from disease. What they desired and what was essential was that their herds and flocks should be free from disease and that no risk whatever should be run. While, unfortunately, there were periodical outbreaks of disease, yet through the instrumentality of the powers that be they had been able to keep those outbreaks within certain limits. It would be a serious matter to admit cattle from abroad to be sent all over the country. What he had to ask was whether or not it was the opinion of the breeders of this country that the restrictions be maintained. From the time of the imposition of the restrictions various deputations had been before the powers that be with reference to this matter.

He then read the following letter received from the Board of Agriculture in 1917 :—

Board of Agriculture and Fisheries,
4, Whitehall Place, London, S.W. 1.
November 20th, 1917.

SIR,—I am directed by the President of the Board of Agriculture and Fisheries to refer to your letter of the 9th inst., forwarding a copy of a resolution passed by the Council of the Royal Agricultural Society of England on the subject of the Diseases of Animals Act, 1896, and I am to acquaint you, for the information of your society, that it is not the intention of His Majesty's Government to remove the present restrictions upon the importation of live cattle into the country.

In the case of cattle from Canada no legislation will be introduced unless and until the importation of live cattle born and reared in that country is found to be both practicable and consistent with domestic policy, after the war, and in any case, the Board would naturally, before any legislation is proposed, take steps to obtain the views of breed societies upon the subject, and to impose whatever measures may be considered necessary to ensure that no appreciable risk of the introduction of disease should be incurred.

I am, Sir,
Your obedient servant,
(Signed) A. W. ANSTRUTHER,
Assistant Secretary.

The Secretary, Royal Agricultural Society of England.

He concluded by moving a resolution in the following terms:—

> Having regard to the great importance of protecting the live stock of this country from the introduction of contagious disease, this meeting of representatives of agricultural and breed societies deprecates in the strongest manner any proposals to repeal the Diseases of Animals Act, 1896.

Mr. J. H. CHICK (President of the Devon Cattle Breeders' Society) seconded the resolution.

The CHAIRMAN informed the meeting that Mr. Neal, a member of the Cattle Markets Committee of the Corporation of London, was present. He did not know whether that gentleman desired to address the meeting. If so, they would be glad to hear his views on the subject.

Mr. W. P. NEAL stated that he had been requested by his colleagues on the Cattle Markets Committee of the Corporation of London to represent them at the meeting that day to put forward the views of the Corporation. At that stage the Corporation had a perfectly open mind regarding this question. The Corporation would be glad if the Royal Agricultural Society and other societies and interests would agree to meet in the Guildhall of the City of London and there hold a conference on that very important subject.

The Corporation of London, under very ancient charters, was the sole market authority for the City of London and several miles round, and under powers and privileges conferred on the Corporation, the great markets now existing had been created. They therefore had to consider, of course, the needs of the consumer. The area over which they exercised jurisdiction contained a population, he believed, of something like nine millions of people, and upon their markets these people had to depend for their daily food. In addition to which, through the Port of London as well as through the markets, a very large amount of food had to be distributed throughout the country. The Corporation had only one object in view, and that was the national interest of the whole kingdom.

If it could be shown that great danger would exist or arise from the importation of Canadian store cattle, the Corporation would take the necessary steps for informing the Government to that effect; but he was informed that it was about thirty-three years since foot-and-mouth disease or pleuro-pneumonia existed amongst Canadian stock. And in view of that, as well as several other matters, the representatives of the Canadian Government were anxious to be present at the meeting he had suggested in order that the Canadian views might be put before the various societies combined. The Corporation would then be in a position to have before them the whole of the evidence that could be produced; the whole matter could be taken into serious consideration; then a formal report could be presented to the Court of Common Council of the Corporation. He might perhaps be permitted to explain why this matter had been brought forward recently.

The fact was, that in the early part of the year, Sir James Bell, the Town Clerk of the City of London, received a letter from the Town Clerk of Glasgow, which contained a resolution to the effect that having regard to the statement of the President of the Board of Agriculture at the Imperial War Conference in 1917 that the Board were in favour of the removal of the restrictions on the importation of Canadian cattle into Great Britain, immediate action be taken for such removal. At the meeting of the Imperial War Conference on April 26, 1917, the question of the admission of Canadian cattle into the United Kingdom was discussed, and the following resolution was moved and accepted by the President of the Board of Agriculture :—"That the embargo on Canadian cattle be removed as speedily as possible." The President of the Board at that meeting stated, "If we do take any action I do not see why it should not be taken at once, especially if we cannot put it into operation until the war is over."

The Corporation of London, by virtue of authority under ancient charters, had considerable weight when expressing views to the Government. They desired in the first instance to have the whole matter brought before them. If the gentlemen present were willing to go to the Guildhall, as he had suggested, the whole matter might be discussed at length, and some decision could be arrived at. The Cattle Markets Committee might have an opportunity of knowing all the facts, and, knowing them, be able to report to the Court of Common Council, who could either confirm or reject the report.

They desired to do their best in the public interest. If the Societies' representatives were willing to place their views before a conference, the Markets Committee were willing to consider them with a perfectly open mind and formulate their report to the Council.

In his opinion, speaking as a farmer, it was not sufficient for the Breed Societies merely to say that they feared the importation of disease. He thought that on the other side there were very great and serious questions with reference to the feeding of the people. It was necessary for the Breed Societies in their own interests carefully to consider the position in which they stood and consider the matter from the broadest possible point of view. Personally, he had a good deal of sympathy with them.

He believed the Breed Societies looked with some alarm at the length of the frontier between Canada and the United States. That, he believed was the crux of the matter. If it should happen that the Government decided that Canadian cattle should be admitted, it would be a matter of the greatest importance for the Government of Canada to see that there were no loop holes to allow American cattle to come over the frontier. It would be for the Canadian Government to see that the cattle were, before export, subject to most careful and rigid examination from a veterinary surgeon of repute. Those present might be quite certain that if the Government did decide to admit these cattle they would be rigidly examined on this side, and probably put in quarantine. If any of the societies could suggest greater safeguards they should do so, because the Corporation wanted everything put before the Government prior to a definite decision being arrived at. He remembered when Deptford Market was in a flourishing condition. They used to receive there a good deal of cattle for slaughter. They were on landing kept for some days—ten, he thought. He did not remember a single case of disease there in the twenty-seven years he had been a member of the Corporation of London.

Mr. SAMUEL KIDNER (Farmers' Club) said this was a question upon which they as agriculturists should express an opinion by themselves. He did not see where they would come in in the matter of a conference with the City Corporation. They knew the dangers and difficulties and what a serious thing it would be to have confidence shaken in their pedigree cattle. He did not think the last speaker had covered all the ground, and pointed out the danger of disease breaking out while the milk supply was short. The most humane way to introduce meat from foreign parts was to send it over dead.

Referring to the possible safeguards mentioned by the previous speaker, Mr. KIDNER said they all knew the dangers from straying cattle. Even where fences were kept in the best condition, when grass got a bit short, there was the danger of the cattle straying over the frontier. As to the examination of the cattle when they arrived here, if they came over by shiploads those present knew what a cursory examination it would be. If they once opened the ports they would never know when disease might be introduced. He thought it would be bad policy on the part of agriculturists to go into conference with the City Corporation on a question of this kind.

Mr. **Christopher Middleton** hoped that the meeting would protest most emphatically against the importation of these cattle except for immediate slaughter. The consumers' interests had been mentioned by a gentleman who had spoken. In his opinion, meat could be imported better in the form it was now than in the form of live cattle. If this relaxation were made in favour of Canadian cattle, how could the extension of the relaxation be prevented? He had no mandate from a Breed Society, but he spoke in the dairy interest. They must recognise what a serious thing it would be. The periodical outbreaks from which the country had suffered were very difficult to deal with, but if importation were permitted those difficulties would be very much increased. It would be most disastrous to the dairy interests and milk production. In the interests of the consumers, breeders and farmers of the country there should be no relaxation of the existing restrictions.

Mr. **Alfred Mansell**, (Shropshire Sheep Breeders' Association) supported the resolution proposed by Mr. Tindall. If they wanted to stimulate the production of meat in this country they must keep out disease. To do anything that would endanger the health of the flocks and herds of this country would be a retrograde step. The confidence of the farmer had of late been severely shaken, and they ought not to shake it any more by risking the introduction of disease.

The resolution proposed by Mr. **Tindall** and seconded by Mr. **Chick** was then put to the meeting and unanimously carried.

The **President** said they had received Mr. Neal's remarks with great respect, and he would like to know whether it was the feeling of the meeting that they should enter into a conference as proposed with the Corporation of the City of London.

Mr. **Kidner** then moved: "That the opinion of this meeting being diametrically averse to the introduction of live cattle, there is no need for a conference with the City of London Corporation."

Sir **Beville Stanier**, M.P., seconded the resolution, which was adopted.

WEDNESDAY, JULY 30, 1919.

Sir J. B. **Bowen-Jones**, Bart. (President), in the Chair.

Present:—*Trustees.*—Mr. C. Adeane, C.B., Lord Middleton, Lord Moreton, and the Earl of Northbrook.

Vice-Presidents.—Mr. Percy Crutchley, the Rt. Hon. Sir Ailwyn E. Fellowes, K.C.V.O., Mr. R. M. Greaves, Mr. Ernest Mathews, the Duke of Portland, K.G., and Lt.-Col. E. W. Stanyforth.

Other Members of the Council.—Mr. H. Dent Brocklehurst, Mr. U. Roland Burke, Mr. W. W. Chapman, the Hon. J. E. Cross, Col. E. Curre, Mr. J. T. C. Eadie, Mr. John Evens, Sir Howard Frank, K.C.B., Lord Harlech, Mr. Joseph Harris, Mr. W. Harrison, Mr. Arthur Hiscock, Major Dunbar Kelly, D.S.O., Col. C. Venables Llewelyn, Mr. J. L. Luddington, Mr. H. F. Plumptre, Mr. F. Hamlyn Price, Mr. Fred Smith. Lord Strachie, Mr. C. Howard Taylor, Sir John O. S. Thursby, Bt., Mr. C. W. Tindall, and Col. E. V. V. Wheeler.

The minutes of the last meeting of the Council, held on Wednesday, June 25, were taken as read and approved.

Major Edward H. M. Elliot, Springfield, Hereford, Capt. Wm. Dixon Garbutt, Agric. Directorate, Bagdad, Mesopotamia, Mr. A. L. Jessopp, Lexham Hall, Swaffham, Norfolk, and Mr. Henry John Thomas, 130 Bute Street, Cardiff, were elected as Governors, and 182 duly nominated candidates were admitted into the Society as Members.

The Report of the Finance Committee was received and adopted; and, on the motion of Mr. **Adeane**, it was resolved: "That in order to facilitate the winding up of the accounts for the Cardiff Show as early as possible, authority be given for the issue during the recess of orders on the Society's bankers for the payment of accounts connected with the Show."

Mr. J. T. C. Eadie introduced a deputation from the Borough and County of Derby to offer to the Council a cordial invitation to hold the Show at Derby in 1921. The deputation consisted of the Mayor of Derby (Mr. W. Blews Robotham), the Marquis of Hartington, Alderman Lord Roe, Mr. Albert Green, M.P., Capt. H. Fitzherbert Wright, Mr. Edward F. Hulse, Mr. John Cotton (Chairman of the Derbyshire Agricultural and Horticultural Society), and Mr. G. Trevelyan Lee (Town Clerk).

The Mayor and other members of the deputation having spoken in support of the invitation, it was unanimously resolved, on the motion of the PRESIDENT, seconded by Lord MIDDLETON, "That the invitation accorded by the deputation from Derby to hold the Show in that town in 1921 be accepted, and that the usual agreement with the Corporation be entered into in due course."

In presenting the Report of the Veterinary Committee, Colonel STANYFORTH said the Veterinary Committee wished to support the following resolution passed at the meeting in the Cardiff Showyard of representatives of Agricultural and Breed Societies: "That having regard to the great importance of protecting the live stock of this country from the introduction of contagious disease, this meeting of representatives of Agricultural and Breed Societies deprecates in the strongest manner any proposals to repeal the Diseases of Animals Act, 1896."

Lord STRACHIE referred to a statement in a memorandum from the Board of Agriculture read by Lord Crawford in the House of Lords, and moved: "That the Council draw attention to the apparent change of attitude of the Board of Agriculture inasmuch as they no longer only base the exclusion of Store Cattle from Canada on the grounds of the danger of the introduction of disease." This resolution was seconded by Sir AILWYN FELLOWES, and, after some discussion, was unanimously carried.

It was further resolved, on the motion of Lord STRACHIE, seconded by the Earl of NORTHBROOK: "That in view of the danger of the infection of the Dairy herds of this country the Council are of opinion that it would be undesirable to import Dairy Cattle from the Continent as was done by the Board of Agriculture in 1914."

Mr. GREAVES stated that, as indicated in the Implement Committee's Report, a meeting had been held after the Committee between representatives of the various motor tractor manufacturers. Mr. Cross and Mr. Courtney had represented the Society at this meeting. Mr. CROSS said that as regarded the meeting with the tractor manufacturers' representatives the whole matter was full of difficulties. In the course of discussion it had been pointed out that some agricultural tractors would have to be registered under the Road Locomotives Act, while others would come under the Motor Car Act. The desirability of reconciling these two Acts had been pointed out, while at the same time the danger of restrictive legislation was fully appreciated. It was really a case of staying, rather than promoting, what might be vexatious legislation.

Lord MIDDLETON, in moving the adoption of the Report of the Committee of Selection, expressed the gratification he was sure they all felt that H.R.H. the Prince of Wales had consented to be their President for next year. It would be a matter of satisfaction to those in the Northern Counties especially to know that His Royal Highness would be President during the year when the Show would be held at Darlington.

WEDNESDAY, NOVEMBER 5, 1919.

Sir J. B. BOWEN-JONES, Bart. (President), in the Chair.

Present:—*Trustees.*—Mr. C. Adeane, C.B., the Earl of Coventry, Sir Gilbert Greenall, Bart., C.V.O., Lord Moreton and the Hon. Cecil T. Parker.

Vice-Presidents.—The Right Hon. Sir Ailwyn E. Fellowes, K.C.V.O., Mr. R. M. Greaves, Mr. Ernest Mathews, Mr. Frederick Reynard, Mr. C. Coltman Rogers and Lieut.-Col. E. W. Stanyforth.

Other Members of the Council.—Mr. D. T. Alexander, Mr. T. L. Aveling, Major Clive Behrens, Mr. H. Dent Brocklehurst, Mr. Davis Brown, Mr. U. Roland Burke, Mr. T. A. Buttar, Mr. W. W. Chapman, the Hon. J. E. Cross, Mr. J. T. C. Eadie, Mr. John Evens, Sir Walter Gilbey, Bart., Mr. Joseph Harris, Sir Arthur G. Hazlerigg, Bart., Mr. Arthur Hiscock, Major Dunbar Kelly, D.S.O., Major G. R. Lane-Fox, M.P., Col. C. Venables Llewelyn, Mr. Alfred Mansell. Earl Manvers, Mr. Christopher Middleton, Mr. G. Norris Midwood, W. A. Mount, M.P., Mr. F. Hamlyn Price, Mr. G. G. Rea, Mr. John Rowell, Mr. Fred Smith, Lord Strachie, Mr. C. Howard Taylor, Sir John O. S. Thursby, Bart., Mr. C. W. Tindall, Col. E. V. V. Wheeler, Capt. J. Bell White, C.B.E., R.N.R., and Capt. T. L. Wickham-Boynton.

Governors.—Capt. Sir Beville Stanier, Bart., M.P., Mr. William Graham.

The following members of the General Darlington Committee were also present :—Alderman T. E. B Bates. Mr. Robert Humphrey, Mr. John Maughan, Mr. Reginald Pease and Mr. H. G. Steavenson (Town Clerk).

The minutes of the last monthly meeting of the Council, held on Wednesday, July 30. were taken as read and approved.

Mr. R. W. Allen. C.B.E., Woodlands, Clapham, Bedford, Mr. H. E. Bennett, Boarden Farms. Staplehurst, Kent, Viscount Folkestone, Longford Castle, Salisbury, and Mr. C. Hamilton Williams, Toddington Manor, Dunstable. were elected as Governors; and 87 duly nominated candidates were admitted into the Society as Members.

Sir ARTHUR G. HAZLERIGG, Bart., introduced a Deputation, representative of the Borough and County of Leicester, who attended the meeting to tender to the Council an invitation to hold the Annual Show at Leicester in 1924. The Deputation consisted of the Mayor of Leicester (Mr. Alderman Walter J. Lovell), the Duke of Rutland (Lord Lieutenant of Leicestershire), Mr. Councillor H. C. Snow, Mr. Alfred Turner (Chairman of the Leicestershire Agricultural Society), and Mr. H. A. Pritchard (Town Clerk).

The MAYOR OF LEICESTER, the DUKE OF RUTLAND and other members of the Deputation spoke in support of the invitation; and, on the motion of the PRESIDENT, seconded by the EARL OF COVENTRY, it was unanimously resolved :—

> "That the invitation accorded by the deputation from Leicester to hold the Show in that city in 1924 be accepted, and that the usual agreement with the Corporation be entered into in due course."

A Report from the Veterinary Committee was received and adopted, including the following resolution which had been passed by them :—

> "That in view of the alarming outbreaks of foot and mouth disease, any relaxation of the law prohibiting the importation of store cattle from abroad is to be strongly deprecated, and the Council desire again to emphasise their support of the following resolution passed by the representatives of Agricultural and Breed Societies in the Cardiff Showyard" :—
>
> > "That having regard to the great importance of protecting the live stock of this country from the introduction of contagious disease, this meeting of representatives of Agricultural and Breed Societies deprecates in the strongest manner any proposals to repeal the Diseases of Animals Act, 1896."

The importance of maintaining the existing restrictions on the importation of live cattle into this country was emphasised by the Hon. CECIL T. PARKER, Lord STRACHIE, Mr. CHRISTOPHER MIDDLETON, Mr. WILLIAM GRAHAM, and Sir BEVILLE STANIER, Bart., M.P.

The Report of the Implement Committee was received and adopted, subject to the omission of a paragraph regarding the amount of fee payable for entries in the Trials of Agricultural Motors, which question was, on the suggestion of Mr. MATHEWS, referred back to the Committee for further consideration.

The Report of the Council to the Annual General Meeting of Governors and Members, to be held at the Royal Agricultural Hall, Islington, at 2.30 p.m., on Wednesday, December 10, was prepared and ordered to be issued.

WEDNESDAY, DECEMBER 10, 1919.

SIR J. B. BOWEN-JONES, BART. (President), in the Chair.

Present:—*Trustees.*—Mr. C. Adeane, C.B., Col. Cornwallis, the Earl of Coventry, Sir Gilbert Greenall, Bart., C.V.O., the Earl of Northbrook, the Hon. C. T. Parker, and Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. C. Coltman-Rogers, Mr. Percy Crutchley, the Right Hon. Sir Ailwyn E. Fellowes, K.C.V.O., Mr. R. M. Greaves, Mr. Ernest Mathews, the Duke of Portland, K.G., Mr. Frederick Reynard, Lt.-Col. E. W. Stanyforth, and the Earl of Yarborough.

Other Members of the Council.—Lord Henry Bentinck, M.P., Mr. H. Dent Brocklehurst, Mr. Davis Brown, Mr. U. Roland Burke, Mr. T. A. Buttar, Mr. Richardson Carr, Mr. W. W. Chapman, Mr. Daniel Combes, Junr., the Hon. J. E. Cross, Col. E. Curre, Mr. John Evens, Sir Walter Gilbey, Bart., Mr. Robert Gray, Lord Harlech, Mr. G. H. Harris, Mr. Joseph Harris, Mr. Robert Hobbs, Junr., Mr. John Howard Howard, Major Dunbar Kelly, D.S.O., Sir Charles V. Knightley, Bart., Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. C. Middleton, Mr. John Myatt, Capt. R. Oliver-Bellasis, Mr. Henry Overman, Mr. R. G. Patterson, Mr. A. W. Perkin, Mr. C. M. S. Pilkington, Mr. H. F. Plumptre, Mr. F. Hamlyn Price, Lord Ranksborough, C.V.O., C.B., Mr. G. G. Rea, Mr. Andrew Rogers, Mr. John Rowell, Mr. Fred Smith, Mr. C. Howard Taylor, Mr. C. W. Tindall, Mr. Brooking Trant, Mr. A. P. Turner, Col. E. Vincent V. Wheeler, Capt. J. Bell White, C.B.E., R.N.R., and Capt. T. L. Wickham-Boynton.

Governors.—Mr. W. F. Holt Beever and Mr. William Graham.

The following members of the Darlington Local Committee were also present:—Mr. John Maughan, Mr. W. Parlour, Mr. Reginald Pease, Mr. Alderman W. E. Pease, and Mr. H. G. Steavenson (Town Clerk and Hon. Local Secretary).

The minutes of the last meeting of the Council, held on Wednesday Nov. 5, were taken as read and approved.

The Earl of Ellesmere, Worsley, Manchester, Mr. F. C. Goodenough, representing Messrs. Barclay's Bank, Major J. P. H. Heywood-Lonsdale, Poundon, Marsh Gibbon, Bicester, Lord Rayleigh, Terling Place, Witham, Essex, and Lieut.-Col. P. Lionel E. Walker, Cavalry Club, Piccadilly, W., were elected as Governors, and 89 duly nominated candidates were admitted into the Society as members.

The Report of the FINANCE Committee was received and adopted. Mr. ADEANE in submitting this report, said the result of the Show at Cardiff was a record, showing a credit balance of 12,039*l.* The cost of the Show was 40,698*l.*, as against 26,716*l.* at Manchester. To meet the extra charges which they knew would arise, the Council had to raise the price for admissions and fees, otherwise, with a normal "gate" the Show would have resulted in a loss. The attendance was very large, the receipts for admissions showing an increase of 13,843*l.* over 1916. The total receipts were 52,737*l.* as compared with 31,197*l.* at Manchester. For this success they were indebted to the Lord Mayor and Corporation of Cardiff, to the Local Committee, to their Honorary Director, Sir Gilbert Greenall, and to the weather.

A deputation from Cambridge, supported by the county and the Isle of Ely, who attended the meeting to offer to the Society a cordial invitation to hold the Show in Cambridge in 1922 was introduced by MR. ADEANE. The deputation consisted of the Mayor of Cambridge (Mr. G. P. Hawkins), the High Steward of the Borough (Col. T. W. Harding, V.D., D.L.), the Master of Downing College, the Town Clerk (Mr. J. E. L. Whitehead, M.A.), the Borough Surveyor (Mr. J. Julian), the Rev. C. H. Brocklebank, M.A., Mr. S. Owen Webb, Chairman of the Cambridgeshire South Branch of the National Farmers' Union, Mr. J. Watts, Great Eastern Railway Company, and Mr. R. Peters.

As Lord Lieutenant of the County, Mr. ADEANE assured the Council that Cambridge and the Isle of Ely would do all in their power to make the visit of the Society a success.

The MAYOR OF CAMBRIDGE presented the formal invitation under the Seal of the Borough Council, and spoke of the advantages of Cambridge as the place for holding the Show. The invitation was also supported by Col. HARDING, as High Steward of the Borough, the MASTER OF DOWNING COLLEGE, as representing the Vice-Chancellor, Mr. S. OWEN WEBB, as President of the Cambridgeshire South Branch of the National Farmers' Union, and the Rev. C. H. BROCKLEBANK.

Sir GILBERT GREENALL stated that, in company with the Secretary and the Surveyor, he had inspected the sites offered. That at Trumpington was by far the best; it was an ideal site, very convenient and perfectly level. Part of it would require laying down to grass, and that was the reason for getting the matter settled as soon as possible.

On the motion of the PRESIDENT, seconded by Sir GILBERT GREENALL, it was unanimously decided that the invitation given by the Borough and County of Cambridge to the Society to visit that town in 1922 be accepted.

Mr. LUDDINGTON, in presenting the Chemical Committee's Report, said he thought there was a general feeling amongst agriculturists that the Fertilisers and Feeding Stuffs Act required drastic amendment, and the Chemical Committee wished to be in a position to put themselves in communication with other bodies interested, so that some joint action might be taken. Referring to the suggested issue of a further number of "Occasional Notes," he stated that these publications had given satisfaction to Members, and the Chemical Committee had a good deal of information for the next issue. As the report stated, Mr. Crabtree had secured a good appointment abroad. They would be sorry to lose him, as he was a most efficient man; but, at the same time, they would all be glad to know he had obtained a good appointment.

Mr. GREAVES repeated the request of the Implement Committee that each Member of the Council would look out for suitable land for the Tractor Trials; and, if successful, that they would communicate as soon as possible with Mr. McRow.

The PRESIDENT then took the opportunity to extend a hearty welcome to the new Members of Council recently elected:—Mr. Daniel Combes, Junr., Mr. G. H. Harris, Mr. Robert Hobbs, Junr., and Mr. C. M. S. Pilkington.

The following Standing Committees were appointed for 1920:—Finance, Journal and Education, Chemical and Woburn, Botanical and Zoological, Veterinary, Stock Prizes, Implement, Showyard Works, Selection, Dairy and Produce, and Special.

The present members of the various Standing Committees were (with some exceptions) re-appointed to those Committees. Mr. Pilkington was added to the Chemical and Woburn and Implement Committees, Mr. Robert Hobbs, Junr., to the Stock Prizes Committee, Mr. Overman to the Implement Committee, Mr. Middleton, Mr. Eadie, Col. Cornwallis, and Mr. Harrison to the Committee of Selection.

Mr. TINDALL reported that, as one of the Society's representatives on the Roads Advisory Committee of the Ministry of Transport, he was desirous of obtaining the views of the Council as to the proposals under discussion by that body.

At the suggestion of the PRESIDENT, the matter was referred for consideration to the War Emergency Committee of the Council.

Mr. DAVIS BROWN called attention to the exorbitant charges made by railway companies for the conveyance of fodder sent with stock to be exhibited at Shows; and this was referred for consideration to the Stock Prizes Committee.

On the motion of the PRESIDENT, seconded by Sir JOHN THOROLD, the seal of the Society was affixed to the agreement with the Corporation of Darlington for the holding of the Show of 1920.

Proceedings at the Annual General Meeting of Governors and Members,

HELD AT THE ROYAL AGRICULTURAL HALL, ISLINGTON.

WEDNESDAY, DECEMBER 10, 1919.

SIR J. B. BOWEN-JONES, BART. (PRESIDENT), IN THE CHAIR.

Present.—*Trustees.*—H.R.H. the Prince of Wales, K.G., Mr. C. Adeane, C.B., the Earl of Coventry, Sir Gilbert Greenall, Bt., C.V.O., Lord Moreton, the Earl of Northbrook, the Hon. C. T. Parker, and Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. C. Coltman-Rogers, Mr. Percy Crutchley, the Right Hon. Sir Ailwyn E. Fellowes, K.C.V.O., Mr. Ernest Mathews, and Mr. Frederick Reynard.

Ordinary Members of the Council.—Mr. T. L. Aveling, Mr. H. Dent Brocklehurst, Mr. Davis Brown, Mr. U. Roland Burke, Mr. T. A. Buttar, Mr. W. W. Chapman, Col. E. Curre, Mr. John Evens, Sir Walter Gilbey, Bart., Mr. Robert Gray, Lord Harlech, Mr. William Harrison, Sir Arthur G. Hazlerigg, Bart., Mr. Arthur Hiscock, Mr. Robert Hobbs, junr., Mr. John Howard Howard, Mr. W. F. Ingram, Major Dunbar Kelly, D.S.O., Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. Christopher Middleton, Mr. John Myatt, Capt. R. Oliver-Bellasis, Mr. Henry Overman, Mr. A. W. Perkin, Mr. C. M. S. Pilkington, Mr. F. Hamlyn Price, Mr. G. G. Rea, Mr. John Rowell, Mr. Fred Smith, Mr. C. W. Tindall, Mr. Brooking Trant, Mr. A. P. Turner, and Capt. T. L. Wickham-Boynton.

Governors.—The Rev. C. H. Brocklebank, Mr. W. G. Millar.

Honorary Member.—Professor Sir John McFadyean.

Members.—The Hon. C. B. Portman, Sir John McLaren, K.B.E., Sir Henry Rew, K.C.B., Messrs. R. L. Angas, John Bailey, W. W. Baylis, Hugh Bentall, Richard Boddington, E. Bohane, W. H. Bradwell, Henry Bridgman, W. J. Casey, George Cave, W. H. Cloake, Charles Cousins, J. F. Crewes, John Crowe, John L. Daniell, Wilfred E. Dean, W. B. Dickinson, J. Dunn, Walter Dunn, C. B. Fisher, W. Fortune, Thomas J. Gee, H. J. Greenwood, John G. Hawkey, H. J. Hedges, W. L. Grant Heelas, Thomas J. Heskett, H. G. Hiorns, W. H. Hogg, M. H. Holman, Henry Hulme, W. C. Jackson, James Lay, Frank P. Matthews, Lt.-Col. Will J. Millar, Messrs. J. H. Mills, H. C. Minchin, Walter Miskin, P. Nerinckx, T. G. Owen, W. Owen, W. Parlour, J. A. Peace, R. Peters, E. C. Ransome, J. Rooke Rawlence, R. Readhead, W. G. Roberts, C. B. Rolfe, F. G. Samson, F. T. Sheldrick, E. H. Sikes, Col. G. A. Soltau-Symons, Lt.-Col. C. Newton Taylor, Messrs. J. Herbert Taylor, J. Thornborrow, E. Trimen, Lt.-Col. F. W. Turner, Messrs. H. B. Turner, Walter Viney, Eldred G. F. Walker, John Warne, James W. Watt, C. Weatherill, Jonas M. Webb, R. F. H. White, James Wood, &c., &c.

The PRESIDENT said: In the first place, I wish to express the thanks of the Royal Agricultural Society to the members of the Smithfield Club and to the Royal Agricultural Hall Company for the loan of this commodious room for this annual general meeting.

At the general meeting in the year 1914 the then President, the Duke of Portland, made reference to the fact that we were living in abnormal and unprecedented times. While this statement may not altogether be so applicable to-day, a feeling of uncertainty undoubtedly exists as to the future of agriculture in this country. We are extremely, devoutly thankful that hostilities have ceased, and that less strenuous times now exist, but the farming industry will not be fully developed until the definite agricultural policy of the Government is clearly laid down, thus enabling the individual initiative of the British farmer, which has done so much in the past, to resume its place in our agricultural industry.

Referring to the Report, the roll of Governors and Members whose loss we deplore is on this occasion a lengthy one, and contains the names of many prominent agriculturists and others closely identified with the agricultural industry.

It is gratifying to know that the membership is still steadily increasing, in spite of numerous changes through death and various other causes. The present total of 11,230 has, I believe, only once been exceeded in the history of the Society. The present figure shows an increase of 2,060 since December 31, 1905. Highly satisfactory as this is, I trust that existing Members will not relax their efforts to obtain more subscribers.

The Cardiff Show, which had to be postponed from 1917 until this year, proved most successful. When it was decided that, in the interests of the agricultural community generally, it was desirable to hold the Show, the Council, taking all the circumstances into consideration, did not anticipate anything approaching the excellent exhibition or the great number of visitors.

The time for making the arrangements for the Show was of necessity very short, as the armistice was not signed until November, 1918; but I am sure that all who visited the Show will agree that the showyard was splendidly laid out and the arrangements excellent, and, as you will be aware, for this we once again owe our thanks to our Honorary Director, Sir Gilbert Greenall, to whose energy and ability in connection with the Shows the Society has been indebted for so many years. (Applause.)

The Show was favoured with splendid weather, and was honoured by the visits of H.R.H. the Prince of Wales, who attended on two occasions. The appreciation of the Prince's presence at the Show and visits to the other industries in the neighbourhood was evinced by the enthusiastic reception given to H.R.H. not only by the visitors to the Show, but by the inhabitants of Cardiff and all parts of South Wales.

The reception of the Society by the county and the city of Cardiff was most cordial, and, while it would be invidious to mention any particular cases, I cannot refrain from referring to my host on the occasion, the Lord Mayor, whose kindness and hospitality were perhaps never exceeded, and his activities in connection with the Show were supreme.

Several residents in the city and county also hospitably entertained visitors to the Show, and there is no doubt that the visit to Cardiff will remain a pleasant memory to those of us who were privileged to attend.

Now as to future Shows, the Society has accepted a very hearty invitation from the Corporation of Darlington to hold the Show in that town next year, and the necessary arrangements for carrying this out are well advanced.

As the Report states, it has been decided to visit Derby in the year 1921 and Leicester in 1924.

To-day the Council accepted a very cordial invitation to hold the Show in 1922 at Cambridge.

Therefore, we may assume that the Society's Annual Show has not lost any of its popularity in the country, and all connected with the Society will appreciate this happy position.

The first business on the agenda is the presentation of the balance-sheet.

This, as stated in the Report, appears in Volume 79 of the Journal issued to Members this year. The Show accounts are in your hands.

Adoption of Report.

Sir JOHN MCLAREN proposed that the report for the year 1919 be received and adopted. There was a certain fitness, he thought, in his being called upon to propose this motion, for he was one of the older members of the Society, and had attended fifty-one of the Shows. He had therefore much pleasure in criticising most favourably the report which they had before them. In years gone by he had sometimes unfavourably criticised these reports. He did not think in his recollection of the Shows of the Royal Agricultural Society (since 1864) they had ever known a Show to be more successful than that at Cardiff this year. The President had referred to the more salient features of the report. He had pointed out that the membership had never been more satisfactory than it was at the present moment. He (Sir J. McLaren) did not remember a single Show at which they had made such a large surplus; but he did remember one which had a deficit of 15,000*l.* (Laughter.) Certainly, from the point of view of finance, and from the point of view of membership, the Society was now very prosperous, and he hoped they would continue to be so. There were one or two points in the report he would like to refer to. One was the announcement made of the great trial of agricultural motor-tractors and ploughs, to be held next October. He thought the Society had come to a wise decision in making up their minds to have those trials. The mechanical operations in agriculture were becoming more and more important every day. The cost of labour, the cost of horseflesh, and the cost of food for animals was going up more and more every day, and the farmers of England would have to look to the engineers to help them in the economical working of their farms. He thought the trials advertised would be productive of a very large entry, and that, under the able testing of the staff of the Royal Agricultural Society, agriculturists in England would get a lead as to which was the best means of cultivating their farms, and guidance as to which of the various schemes put forward was most suitable for them. It was a pleasure to read the reports of the various departments, and he would only refer to one or two of them. The Chemical Department, under his old friend Dr. Voelcker, continued to do its work in the most splendid and efficient manner. One important question dealt with in the report was that of animal diseases. He thought the Council of their Society had done well in the important assistance given to the Government in dealing with these recent outbreaks of cattle diseases. It was to be hoped that they would not relax their vigilance, but would keep their eyes open for any possible developments, and give their able assistance whenever it became necessary. He also desired to speak of the way the War Emergency Committee had carried out their duties, and as to the work which had been done by the Agricultural Relief of Allies Committee, in sending stock and seed to the ruined districts in both Northern and Southern Europe. (Applause.) They were proud of those Committees, and congratulated them on the work they had done. The business and profession of agriculture were placed in serious difficulties, in common with all trades and commerce at the moment. They were just emerging from the greatest upheaval the world had ever known, and it was not to be expected that the wheels could be got into running order within five minutes of the signing of the armistice. A serious question they, as agriculturists, had got to face was the proposed restriction on the hours of labour, which seemed to him very dangerous. The burden of taxation and so forth was pressing upon them very heavily, and called for improved systems of book-keeping and accounting. He was glad to see, from the advertisement in the report, that the Royal Agricultural Society had not failed to see the necessity for providing books for keeping farm accounts. He was sure that the meeting would receive the report and adopt it with enthusiasm. (Applause.)

Mr. **Walter Miskin** (Hoo, Rochester), in seconding the adoption of the report, said that he had had the pleasure at Cardiff of meeting some of the overseas soldiers then present in this country, and showing them round the sheep department. They took a keen interest in everything they saw, but one thing they could not understand was the colouring of some of the sheep. They said, "Why don't you show them in their natural state; why all this colouring?" He had explained that it had been the custom in different counties to prepare the sheep in that way; but he took the opportunity of mentioning the matter that day because he thought the Council might at some future time like to consider whether it would not be possible for the sheep at the Show to be exhibited in their natural state.

The report was then unanimously adopted.

Election of President.

The **Earl of Coventry** said that he considered it a very great honour that he should have been asked to propose H.R.H. the Prince of Wales as

President of the Society for the ensuing year. It would be remembered that as late as June last they had had the honour of electing His Royal Highness a Trustee of the Society, and now they were asking him to take on further work in connection with agriculture, of which he had been a great supporter hitherto. They knew that His Royal Highness would do this with all his heart, because the Royal Family in England had always taken the utmost possible interest in the welfare of agriculture. (Applause.) His Royal Highness would succeed in the Presidency the following members of the Royal House:—Queen Victoria, Prince Consort, King Edward, Prince Christian, and H.M. King George. He hoped His Royal Highness the Prince of Wales would carry with him in the future, as he had done in the past, the sincere good wishes of all who were engaged in agriculture in his year of office. His Lordship had been amongst those present during the Show at Cardiff this year. He thought they were all pleased to see the interest that His Royal Highness had taken in viewing the cattle and other exhibits in the showyard. He had attended their meeting, and had always been ready to help in every way. His Lordship was sure that in agricultural circles the Prince would always be welcomed, and they would always be pleased to see him in the showyard.

The resolution was seconded by the Hon. **Claud B. Portman**, and, on being put to the meeting, was carried with acclamation.

H.R.H. **Prince of Wales**, K.G., in acknowledging his election, said: "I thank you most sincerely for the honour you have done me in electing me President of the Royal Agricultural Society for the year 1920. It is a very pleasant surprise for me to see you all so soon after my return to England. The last time we met was at the Royal Show at Cardiff, which I think we can call a record Show. I was able to see that the city of Cardiff, the Lord Mayor, and many other Welshmen gave the Society a good time, and I know they gave me a good time. (Applause.) I was very pleased, as I said at the time, that there were so many overseas men present who were given an opportunity of seeing something of the exhibits in the Old Country. Since then I have had a wonderful three months in Canada. I was at an Agricultural Show, which was part of the Toronto Exhibition, and which was of very great interest. Then, as any one would who really wants to see farming and agriculture in Canada, I went West. While I was there, as some of you know, I purchased a small ranch in Alberta. I have always been very interested in agriculture. The Home Farm of the Duchy of Cornwall has always had a certain number of stock, and has been exhibiting at the Royal Show for many years. My visit to Canada has only increased my interest in agriculture, and has made me realise the great importance—and I may say the necessity—of closer intercourse between farmers and agriculturists throughout the Empire. I hope that next year's Show at Darlington may be another record. I wish all success to the Society, and thank you again for the honour you have done me in electing me President." (Applause.)

Election of Trustees.

The **President** announced that the following twelve Trustees had been nominated by the Council in accordance with the bye-laws:—

C. Adeane, C.B., Babraham Hall, Cambridge.
The Duke of Bedford, K.G., Woburn Abbey, Bedfordshire.
Sir J. B. Bowen-Jones, Bart., Council House Court, Shrewsbury.
Col. F. S. W. Cornwallis, Linton Park, Maidstone, Kent.
The Earl of Coventry, Croome Court, Severn Stoke, Worcestershire.
The Duke of Devonshire, K.G., Government House, Ottawa, Canada.
Sir Gilbert Greenall, Bart., C.V.O., Walton Hall, Warrington.
Lord Middleton, Birdsall House, Malton, Yorks.
Lord Moreton, Sarsden House, Kingham, Oxford.
The Earl of Northbrook, Stratton, Micheldever, Hampshire.
The Hon. Cecil T. Parker, The Grove, Corsham, Wiltshire.
Sir John H. Thorold, Bart., Old Hall, Syston, Grantham.

On a show of hands they were declared re-elected as Trustees, to hold office until the next ensuing annual general meeting.

Election of Vice-Presidents.

The Vice-Presidents were elected in a similar manner, their names being :—

C. Coltman-Rogers, Stanage Park, Brampten Bryan.
Percy Crutchley, Sunninghill Lodge, Ascot, Berkshire.
The Earl of Derby, K.G., Knowsley, Prescot, Lancashire.
The Rt. Hon. Sir Ailwyn E. Fellowes, K.C.V.O., Honingham, Norwich.
R. M. Greaves, Wern, Portmadoc, North Wales.
Ernest Mathews, Little Shardeloes, Amersham, Bucks.
The Duke of Portland, K.G., Welbeck Abbey, Worksop, Notts.
The Earl of Powis, Powis Castle, Welshpool, Mont.
Frederick Reynard, Sunderlandwick, Driffield, Yorkshire.
The Duke of Richmond and Gordon, K.G., Goodwood, Chichester.
Lieut.-Col. E. W. Stanyferth, Kirk Hammerton Hall, York.
The Earl of Yarborough, Brocklesby Park, Lincolnshire.

Election of Auditors.

Sir HENRY REW moved : "That the best thanks of the Society be tendered to Messrs. Jonas M. Webb, Hubert J. Greenwood and Newell P. Squarey for their services as auditors, and that they be elected for the ensuing year." He had much pleasure in doing this, as it enabled the meeting, in an indirect way, to express their approval of the general management of the financial affairs of the Society. (Hear, hear.)

The resolution was seconded by Mr MILLAR, and passed unanimously.

Elections to the Council.

The PRESIDENT then reported, under Bye-law 87, the names of the following ordinary members of the Council who had been elected to represent the several divisions of the Society included in Group "B," in order that the meeting might take cognisance of their election :—

Durham : Christopher Middleton, Vane Terrace, Darlington.
Yorks. (West Riding): Major George R. Lane-Fox, M.P., Brampton Park, Boston Spa ; C. Howard Taylor, Middlewood Hall, Barnsley.
Nottingham : Claude M. S. Pilkington, Wollaton, Nottingham.
Leicester : Sir Arthur Grey Hazlerigg, Bart., Noseley Hall, Leicester.
Rutland : Lord Ranksborough, C.V.O., C.B., Ranksborough, Oakham.
Suffolk : Fred Smith, Deben Haugh, Woodbridge.
Buckingham : G. H. Harris, Long Moor Farm, Aston Abbotts, Aylesbury.
Essex : Sir Walter Gilbey, Bart., Elsenham Hall, Elsenham.
London : W. W. Chapman, 4 Mowbray House, Norfolk Street, W.C. 2 ; Sir Howard Frank, K.C.B., 20 Hanover Square, W. 1 ; F. Hamlyn Price, 7 Harley Gardens, S.W. 10.
Shropshire : Lord Harlech, Brogyntyn, Oswestry ; Alfred Mansell, College Hill, Shrewsbury.
Hereford : Arthur P. Turner, Fayre Oakes, Hereford.
South Wales : Col. C. Venables Llewelyn, Llysdinam, Newbridge-on-Wye.
Devon : Andrew Rogers, Great Woodford, Plympton
Wiltshire : Daniel Combes, jun., Dinton Manor, Salisbury.
Surrey : Major Dunbar Kelly, D.S.O., New House Farm, Worcester Park.

Thanks to Retiring President.

The Rev. C. H. BROCKLEBANK (Cambridge) proposed a hearty vote of thanks to Sir J. B. Bowen-Jones for his services during the past year. It was, he said, a very easy task to be set when they had a President of such diligence and popularity, as it needed so few words from the proposer. He was sure that Sir Bowen would always look back upon this year of office with great pleasure, for he had brought off a "double event" in being President for the Show for the first year after the War and in having the largest financial taking for a show ever known.

Mr. J. HERBERT TAYLOR (Crawley), in seconding the vote of thanks, said he had had the honour of serving with Sir Bowen Bowen-Jones on the Royal Commission on Horse Breeding, and he had no hesitation in saying that Sir Bowen had shown the greatest zeal that any man could show.

The SECRETARY put the motion, and it was carried by acclamation.

The PRESIDENT, in acknowledging the vote, said he could assure those present that he felt that the honour of being President of the Royal Agricultural Society had been the greatest conferred on him in his long life. He thanked them very cordially for the great assistance given him during his term of office. (Applause.)

CARDIFF SHOW,

JUNE 24 TO 28, 1919.

Officials of the Show.

PRESIDENT:

SIR J. B. BOWEN-JONES, BART.

Honorary Director.

Sir GILBERT GREENALL, Bart., C.V.O., Walton Hall, Warrington.

Stewards.

Reception of Overseas Dominions Soldier Agriculturists.

Col. F. S. W. CORNWALLIS, Linton Park, Maidstone.

Horses.

CYRIL E. GREENALL, The Manor, Carlton Scroop, Grantham.
JOHN ROWELL, Bury, Huntingdon.

Cattle.

JOSEPH HARRIS, Brackenbrough Tower, Carlisle.

Sheep, Goats and Pigs.

L. C. WRIGLEY, 7 Park Street, Cirencester.

Steward of Dairy, Poultry and Produce.

ERNEST MATHEWS, Little Shardeloes, Amersham, Bucks.

Steward of Veterinary Examinations.

CYRIL E. GREENALL, The Manor, Carlton Scroop, Grantham.

Steward of Forage.

HUBERT ALEXANDER, 5 High Street, Cardiff.

Stewards of Implements.

U. ROLAND BURKE, Compton Estate Office, Eastbourne.
The Hon. J. E. CROSS, High Legh, Knutsford.

Stewards of Refreshments.

PERCY CRUTCHLEY, Sunninghill Lodge, Ascot.
WILLIAM HARRISON, Albion Ironworks, Leigh, Lancashire.

Steward of Agricultural Education Exhibition.

J. L. LUDDINGTON, Littleport, Ely, Cambs.

Stewards of Forestry.

C. COLTMAN-ROGERS, Stanage Park, Brampton Bryan.
GEORGE MARSHALL, Broadwater, Godalming.

Steward of Horticultural Exhibition.

Sir ARTHUR G. HAZLERIGG, Bart., Noseley Hall, Leicestershire.

Stewards of Finance.

CHARLES ADEANE, C.B., Babraham Hall, Cambridge.
THOMAS L. AVELING, Boley Hill House, Rochester.
RICHARDSON CARR, Mill Lawn, Burley, Brockenhurst.

Surveyor.

J. R. NAYLOR, F.R.I.B.A., Smith's Bank Chambers, Derby.

Secretary.

THOMAS MCROW, 16 Bedford Square, London, W.C.1.

JUDGES OF IMPLEMENTS.

Miscellaneous Implements entered for Silver Medals.

THOMAS BAXTER, Freeford, Lichfield.
WALTER L. BOURKE, Moneycrower, Maidenhead.

JUDGES OF LIVE STOCK, &c.

HORSES.

Shires.—*Classes* 1-11.

JAMES GOULD, Crouchley, Lymm, Cheshire.
FRED. W. IBBOTSON, Blue Barn, Langwith, Mansfield.

Clydesdales.—*Classes* 12-20.

ROBERT PARK, Brunstane, Portobello.
JAMES WEIR, Sandilands, Lanark.

Suffolks.—*Classes* 21-28.

GODFREY A. HEMPSON, Spring Vale, Sproughton, Ipswich.
CORDY S. WOLTON, The Hall, Lavenham, Suffolk.

Percheron.—*Classes* 29-31.

A. OLLIVIER, Inspector General des Haras, 3rd Arrondissement Ministère de l'Agriculture, Nantes, France.

Hunters.—*Classes* 32-43.

MAXWELL ANGAS, Lessen Hall, Nenagh, Ireland.
HENRY CHOLMONDELEY, Estate Office, Sledmere, Malton.

Polo Ponies.—*Classes* 44-48, **and Riding Classes.**—*Classes* 79-87.

MAXWELL ANGAS, Lessen Hall, Nenagh, Ireland.
SIR MERRIK R. BURRELL, Bart., Knepp Castle, Horsham, Sussex.

Cleveland Bays.—*Classes* 49 and 50.

G. H. CHAPMAN, Barnaby Grange, Guisborough.

Yorkshire Coach Horses.—*Classes* 51 and 52.

C. FOXTON, Stillingfleet Hill, York.

Hackneys.—*Classes* 53-59; **and Hackney Ponies.**—*Classes* 60-63.

THOMAS PRENTICE, Loancroft House, Uddingston.
HENRY WATSON, Newton Kyme, Tadcaster.

Welsh Ponies.—*Classes* 64-76.

JOHN R. BACHE, The Cedars, Knighton, Radnorshire.
E. JONES, Manoravon, Llandilo, South Wales.

Shetland Ponies.—*Classes* 77 and 78.

FRANCIS N. M. GOURLAY, Milnton, Tynron, Thornhill.

Harness Horses.—*Classes* 88-94.

ROMER WILLIAMS, Newnham Hall, Daventry.
Right Hon. FREDERICK WRENCH, Killacoona, Ballybrack, Co. Dublin.

Trade Turnouts.—*Classes* 95-98.

JOHN ROWELL, Bury, Huntingdon.

Colliery Horses.—*Classes* 99-102.

DAVID REES, Ferndale, Glamorganshire.

Trotting Horses.

J. ANDREWS, Audenshaw, Manchester.

CATTLE.

Shorthorns—*Classes* 103-113.

ROBERT HORNSBY, Hovingham, Malton, Yorks.
JAMES PETER, Berkeley Castle Estate Office, Berkeley, Glos.
Right Hon. FREDERICK WRENCH, Killacoona, Ballybrack, Co. Dublin.

Dairy Shorthorns.—*Classes* 114-122.

WALTER CROSLAND, Buscot Park, Faringdon, Berks.
J. L. SHIRLEY, Silverton House, Bletchley.

Lincolnshire Red Shorthorns.—*Classes* 123-130.

T. H. B. FRESHNEY, Grainthorpe, S.O., Lincs.

Herefords.—*Classes* 131-140.

A. E. HILL, Egleton Court, Ledbury.
HENRY W. TAYLOR, Showle Court, Ledbury.

Devons.—*Classes* 141-146.

Robert Bruford, Nerrols, Taunton.

South Devons.—*Classes* 147-151.

Thomas Willing, Foredown Lodge, Kingskerswell, Devon.

Longhorns.—*Classes* 152-155.

F. W. Southam, Dderw Estate Office, Llyswen, Breconshire.

Sussex.—*Classes* 156-160.

W. Massie, Mulgrave Estate Office, Lythe, Whitby.

Welsh.—*Classes* 161-168.

David Jenkins, Neuadd-yr-ynys, Taliesin, Cardiganshire.

William Owen, Penymynydd Valley, Anglesea.

Red Polls.—*Classes* 169-174.

Reginald B. Astley, Compton Beauchamp, Shrivenham.

J. E. Quested, The Firs, Cheriton, Kent.

Aberdeen-Angus.—*Classes* 175-180.

John Macpherson, Mulben Mains, Keith.

James Whyte, Hayston, Glamis.

Galloways.—*Classes* 181-185.

Walter Biggar, Grange Farm, Dalbeattie.

Ayrshires.—*Classes* 186 and 187.

John Murray, The Muir, Cumnock.

British-Friesians.—*Classes* 188-193.

Harold B. Cooke, Homewood Gate, East Chiltington, Lewes.

Iman G. J. van den Bosch, Osterbeck, near Arnhem, Holland.

Jerseys.—*Classes* 194-201.

A. F. Neel, Halcyan House, Manta l'Abbé, Jersey.

Herbert Padwick, The Red House, West Ashling, Chichester.

Guernseys.—*Classes* 202-208.

David Michie, Tichborne Park Estate Office, Alresford, Hants.

Kerries.—*Classes* 209-212; and Dexters.—*Classes* 213-216.

H. D. Betteridge, Drayton House, 301 Woodstock Road, Oxford.

Milk Yield Prizes and Butter Tests.

Awards made on Certificate of the Steward of Dairying.

SHEEP.

Oxford Downs.—*Classes* 232-236.

James P. Case, Binham, Wighton, Norfolk.

Henry Overman, Kipton House, Weasenham, Swaffham, Norfolk.

Shropshires.—*Classes* 237-243.

J. E. Bourne, Arbour Farm, Market Drayton.

Thomas A. Buttar, Corston, Coupar Angus.

Southdowns.—*Classes* 244-249.

F. H. Jennings, Gedding Rectory, Bury St. Edmunds.

James Stacey, Northease, Lewes.

Hampshire Downs.—*Classes* 250-255.

E. J. Bennett, Killarney, Carlton Road South, Weymouth.

Joseph Dean, 65, Wilton Road, Salisbury.

Suffolks.—*Classes* 256-261.

W. Boggis, Carlton Grange, Brinkley, Newmarket.

Dorset Downs.—*Classes* 262-264.

W. C. Bartlett, Durweston, Blandford.

Dorset Horns.—*Classes* 265-268.

W. England, Quantock, West Monkton, Taunton.

Ryelands.—*Classes* 269-273.

C. H. Hobbs, Oldport, Oswestry.

Kerry Hill (Wales)—*Classes* 274-277.

John Hamar, The Farlands, Brampton Bryan, Herefordshire.

Lincolns.—*Classes* 278-283.

J. M. Strickland, Warren House, Brandsby, Easingwold.

Robert Wright, Beckfield, Heighington, Lincoln.

Leicesters.—*Classes* 284-287.

John Dobson, Green Dragon, Burton, Westmorland.

Border Leicesters.—*Classes* 288-290.

John Kinnaird, Newmains, Stenton, Prestonkirk.

William Pringle, Branton, Powburn, Glanton, Northumberland.

Wensleydales.—*Classes* 291-296.

R. H. Milner, Borwick Lodge, Carnforth.

Thomas Styan, Park Gate Farm, Wensley, Leyburn.

Lonks.—*Classes* 297-299 ; **and Derbyshire Gritstones.**—*Classes* 300 and 301.

E. Askew, The Home Farm, Ormerod House, Burnley.

Kent or Romney Marsh.—*Classes* 302-307.

W. R. Harvey, Hatch House, Chartham, Canterbury.

R. Stanley Strouts, Singleton Manor, Great Chart, Ashford, Kent.

Cotswolds.—*Classes* 305-311.

George Freeman, Mill Hill Farm, Sherborne, Northleach.

Devon Long Wools.—*Classes* 312 and 314.

W. Greenway, Manor Farm, Halse, Taunton.

South Devons.—*Classes* 315-319.

E. B. Trant, Tremabe, Liskeard, Cornwall.

Dartmoors.—*Classes* 320-322.

R. R. Dawe, Ford Farm, Sydenham Dameral, Tavistock.

Exmoor Horn.—*Classes* 323-325.

T. Lovelace, Bratton Court, Minehead, Somerset.

Cheviots.—*Classes* 326-328.

Robert T. Elliot, Chatto, Kelso.

Herdwicks.—*Classes* 329-331.

John Hawell, The Riddings, Threlkeld, Penrith.

Welsh Mountain.—*Classes* 332-335.

W. G. Roberts, Maes-y-porth, Conway.

South Welsh.—*Classes* 336 *and* 337.

Black-faced Mountain.—*Classes* 338 and 339.

M. G. Hamilton, Woodfords, Cobbinshaw.

GOATS.

Goats.—*Classes* 340-350.

B. Ravenscroft, 28 Russell Square, London, W.C.1.

PIGS.

Large White—*Classes* 358-360.

Frank Webb, Estate Office, Shenstone, Lichfield.

Alfred W. White, Hillegom, Spalding.

Middle Whites.—*Classes* 361-366.

Charles Spencer, Manor Cottage, Brampton, Hants.

Tamworths.—*Classes* 367-372.

C. Howard Taylor, Middlewood Hall, Barnsley.

Berkshires.—*Classes* 373-378.

R. B. Vincent, Manor Farm, Waterston, Dorchester.

Large Blacks.—*Classes* 379-384.

A. H. Cobbald, Acton Hall, Sudbury, Suffolk.

Lincolnshire Curly-coated.—*Classes* 385-390.

Fred Casswell, Manor House, Graby, Folkingham.

Gloucester Old Spots—*Classes* 391-396.

Eldred G. F. Walker, The Hollies, Chew Stoke, Bristol.

POULTRY.

Classes 397-544.

James Bateman, Milnthorpe, Westmoreland.

Alfred Birch, Sefton, Seaforth, Liverpool.

Frank Bloomer, Amblecote, Stourbridge.

Walter Bradley, Homelea, Silsden, Yorks.

W. W. Broomhead, 6 Jessica Road, Wandsworth, S.W.18.

A. J. Falkenstein, Dallington, Sussex.

R. Fletcher Hearnshaw, Fox Hill, Burton Joyce, Notts.

Tom H. Furness, Carlton House, Chesterfield.

T. C. Heath, Keele, Newcastle, Staffs.

W. Roger Smith, Copley House, Pattingham, Wolverhampton.

G. L. Watkins, Maindee, Caerphilly, Cardiff.

RABBITS.

Classes—545-568.

T. J. Ambrose, Cliftonville, Ilkley, Yorks.

T. B. Mason, 49 Chester Road, Southport.

PRODUCE.

Butter.—*Classes* 569-576;
Caerphilly, Small Cheeses and Soft Cheeses—*Classes* 586-591.

J. F. Blackshaw, The Cottage, Bromsgrove.

Cheese.—*Classes* 577-585, and 592.

John Benson, The Kettering Dairy, Dalkeith Place, Kettering.

Professor R. J. Drummond, Dairy School, Kilmarnock.

Bacon and Hams.—*Classes* 593-606.

D. J. Williams, Market Place, Leicester.

Cider and Perry.—*Classes* 607-614.

B. T. P. Barker, M.A., Research Station, Long Ashton, Bristol.

W. J. Grant, Pentonville, Newport, Mon.

Bottled and Preserved Fruits, Bottled Vegetables and Jams.—
Classes 615-633.

J. Spires, Army & Navy Co-operative Society, Ltd., 105 Victoria Street, London, S.W.1.

Wool.—*Classes* 634-652.

W. A. Smith, Murivance, Shrewsbury.

William Whittingham, Canal Road, Bradford.

TIMBERING COMPETITIONS.

Thomas Griffiths, Cymmer, Porth, Glam.

PLANTATIONS COMPETITION.

A. P. Long, Divisional Forest Officer, 6 Earl's Road Tunbridge Wells.

W. H. Bennett, Brackenbrough Tower Estate, Carlisle.

FORESTRY.

Professor H. A. Pritchard, 76 Castle Street, Cirencester, Glos.

HORTICULTURE.

N. F. Barnes, Eaton Gardens, Chester.

F. Jordan, Ford Manor Gardens, Lingfield Surrey.

A. Mackellar, Royal Gardens, Windsor.

James Vert, Whitehurst, Ruabon, N. Wales.

CHIEF VETERINARY OFFICER.

John Malcolm, F.R.C.V.S., Holliday Street Wharf, Birmingham.

ASSISTANT VETERINARY OFFICER.

William Trigger, F.R.C.V.S., Newcastle, Staffs.

VETERINARY INSPECTORS.

Professor J. Macqueen, F.R.C.V.S., Royal Veterinary College, Camden Town, London, N.W.1.

F. L. Gooch, F.R.C.V.S., St. Martin's, Stamford.

R. W. Hall, M.R.C.V.S., Veterinary Infirmary, Tynewydd Road, Barry, Glam.

John L. Perry, M.R.C.V.S., 53 Charles Street, Cardiff.

AWARDS OF PRIZES AT CARDIFF, 1919.

ABBREVIATIONS.

I., First Prize. II., Second Prize. III., Third Prize. IV., Fourth Prize. V., Fifth Prize. R. N., Reserve Number. H. C., Highly Commended. C., Commended.

N.B.—The responsibility for the accuracy of the description or pedigree, and for the eligibility to compete of the animals entered in the following classes, rests solely with the Exhibitors.

Unless otherwise stated, each Prize Animal in the Classes for Horses, Cattle, Sheep, and Pigs, was "bred by Exhibitor."

HORSES.

Shires.[1]

No. in Catalogue

Class 1.—*Shire Stallions, foaled in* 1918.

[10 entries.]

8 I. (£15)—JOHN MEASURES, Dunsby, Bourne, Lincs., for **Marvshall Majestic**, brown, bred by J. J. Stubley, St. Mary's Hall, King's Lynn; *s.* Dullas Model 30371, *d.* Ivy Empress 61115 *by* Redlynch Forest King 3 26.

9 II. (£10.)—ROBERT L. MOND, Combe Bank, nr. Sevenoaks, Kent, for **The Prince**, bay; *s.* Sundridge Coming King 33508, *d.* Sundridge Coming Queen 83161 *by* Tandridge Coming King 29926.

6 III. (£5.)—E. C. FAIRWEATHER, Avisford Park, Arundel, Sussex, for **Chearsley Briar King**, bay, bred by R. Roadnight, Manor Farm, Chearsley, Aylesbury; *s.* Normanby Briar King 32672, *d.* Chearsley Blossom 3rd 4313 *by* King Premier 30586.

2 R. N.—WILLIAM JOHN CUMBER, Theale, Berks., for **Theale Victory**.

Class 2.—*Shire Stallions, foaled in* 1917. [10 entries.]

12 I. (£15, & Champion.[2])—DENBY COLLINS, The Shire Stud, Bramhope, Leeds, for **Fenny Emperor** 35622, dark bay, bred by George Cotterill, Fenny Compton, Leamington; *s.* Normanby Jesse 32675, *d.* Peak Dolly Daydream 191 *by* New Cut Harold 2nd 25486.

13 II. (£10.)—SIR WALPOLE GREENWELL, BT., Marden Park, Woldingham, Surrey, for **Marden Dictator** 35839, bay; *s.* Champion's Goalkeeper 30296, *d.* Dunsmore Chessie 80183 *by* Dunsmore Raider 21 67.

14 III. (£5.)—SIR WALPOLE GREENWELL, BT., for **Marden Dreadnought** 35843, bay; *s.* Champion's Goalkeeper 30296, *d.* Marden Dolly 82181 *by* Marden Forest King 28534.

11 R.N.—H. M. THE KING, Sandringham, for **Field Marshal 5th.**

17 H. C. and Special.[3]—THE EARL OF POWIS, for **Welshpool Dray King.**

C.—15, 16.

Class 3.—*Shire Stallions, foaled in* 1916. [9 entries.]

24 I. (£15, & R. N. for Champion.[2])—ERNEST W. HEADINGTON, Cippenham Court, Slough, Bucks., for **Monks Green Friar** 35891, brown, bred by Arthur Smiles, Monks Green, Fetcham, Leatherhead; *s.* Friar Tuck 4th 31447, *d.* Monks Green Forest Queen 71719 *by* King of Tandridge 24351.

22 II. (£10.)—WILLIAM JOHN CUMBER, Theale, Berks., for **Theale Lockinge** 3 243, bay; *s.* Norbury Menestrel 23543, *d.* Lockinge Rosa 61016 *by* Lockinge Sweet William 20654.

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[1] £190 towards these Prizes were given by the Shire Horse Society.

[2] Champion Gold Medal, and £5 to the Reserve, given by the Shire Horse Society for the best Stallion in Classes 1 to 3. A Prize of £5 is also given by the Shire Horse Society to the Breeder of the Champion Stallion, provided the Breeder is a Member of the Shire Horse Society, and the Dam of the animal is registered in the Shire Horse Stud Book.

[3] Special District Prize of £10 given by a Member of the R.A.S.E. for the best Stallion in Classes 1 to 3, the property of an Exhibitor residing in Wales or Monmouthshire.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

26 III. (£5.)—JOHN C. JACKSON, The Grange, Askern, Doncaster, Yorks., for **Beachendon Royal Blue** 34526, bay, bred by W. C. & A. J. Flowers, Beachendon, Aylesbury; *s.* Halstead Blue Blood 27397, *d.* Pendley Siren 64596 *by* Catthorpe Cornelian 25053.

22A R. N.—THE DUKE OF DEVONSHIRE, K.G., Chatsworth, Chesterfield, for **Chatsworth Consoler.**

27 R. N. for Special.[1]—THE EARL OF POWIS, for **Leighton Champion.**

Class 4.—*Shire Fillies, foaled in* 1918. [9 entries.]

32 I. (£20.)—PENDLEY STOCK FARMS, Pendley, Tring, Herts., for **Pendley Princess 4th**, bay, bred by J G. Williams, Pendley Manor, Tring: *s.* Norbury Menestrel 23543, *d.* Bardon Forest Princess 55968 *by* Lockinge Forest King 18867.

31 II. (£15.)—W. HOWARD PALMER, Stokes Farm, Wokingham, Berks., for **Stokes Coming Queen**, brown; *s.* Sundridge Coming King 33568, *d.* Monks Green Brilliant 82308 *by* Norbury Menestrel 23543.

30 III. (£10.)—E. C FAIRWEATHER, Avisford Park, Arundel, Sussex, for **Edgcote Diamond Queen**, black, bred by Edgcote Shorthorn Co., Edgcote Banbury; *s.* Blaisdon Jupiter II. 31207, *d.* Black Diamond 83892 *by* General Dewey 21460.

37 IV. (£5, & Special.[2])—OWEN WILLIAMS, Crossways, nr. Cowbridge, Glam., for **Crossways Forest Maid**, bay, bred by F. Farnsworth & Sons Shawswell, Cirencester; *s.* Friar Tuck 31447, *d.* Brockhall Primrose 47333 *by* Lockinge Forest King 18867.

34 R. N.—F. W. RUDDER, Dorridge, Birmingham, for **Dorridge Jewel.**

Class 5.—*Shire Fillies, foaled in* 1917. [9 entries.]

44 I. (£20, & R.N. for Champion.[3])—PENDLEY STOCK FARMS, Pendley, Tring, Herts, for **Pendley Lady**, bay, bred by J. G. Williams, Pendley Manor, Tring; *s.* Champion's Goalkeeper 30296, *d.* Snelston Lady 72449 *by* Slipton King 26692.

45 II. (£15.)—EDWARD PORTER, The Hollies, Deeping St. Nicholas, Spalding, Lincs., for **Edgcote Whitesocks**, 92808, bay, bred by Edgcote Shorthorn Company, Ltd., Edgcote, Banbury; *s.* Normanby Jesse 32875, *d.* Horning Whitesocks 71167 *by* Woodreeve 24772.

38 III. (£10)—ROBERT CROW, Jealots Hill Farm, Warfield, Bracknell, for **Normanby Mond**, brown, bred by Sir Berkeley Sheffield, Bt., Normanby Park, Doncaster; *s.* Normanby Briar King 32672, *d.* Cippenham Monica 73942 *by* Dowsby Forest King 27253

41 IV. (£5.) E. C. FAIRWEATHER, Avisford Park, Arundel, Sussex, for **Edgcote Fantasy** 92804, bay, bred by Edgcote Shorthorn Company, Edgcote Banbury; *s.* Champion's Courtier 32214, *d.* Buscot Fantasy 47384 *by* Conqueror of Waresley 19509.

39 R.N.—JOHN HENRY DEAN, Aylesbury House, Packwood, Warwickshire, for **Lowesby May Morn.**

Class 6.—*Shire Fillies, foaled in* 1916. [6 entries.]

51 I. (£20, & Champion.[3])—PENDLEY STOCK FARMS, Pendley, Tring, Herts., for **Medlar Bella** 89533, brown, bred by Harry Jackson, Hambleton, Poulton-le-Fylde; *s.* Friar Tuck 4th 31447, *d.* Medlar Fuchsia 78797 *by* Blythwood King Maker 18534.

49 II. (£15.)—E C. FAIRWEATHER, Avisford Park, Arundel, for **Edgcote Lady Betty** 92806, bay, bred by Edgcote Shorthorn Company, Edgcote, Banbury; *s.* Childwick Champion 2215, *d.* Blackthorn Betty 73496 *by* Halstead Blue Blood 27397.

47 III. (£10.)—JOHN HENRY DEAN, Aylesbury House, Packwood, Warwickshire, for **Flower** 93031, brown, bred by J. Sherwin, Stanthorne Hall Farm, Middlewich; *s.* Crumleigh Hatton Friar 31562, *d.* Dolly *by* Waverton Matchless 21014.

52 IV. (£5., & R. N. for Special.[2])—W. A. PRYTHERCH, Bodfeddan, Tycroes, Anglesey, for **Cambrian Lilac** 87817, brown; *s.* Rickford Coming King 27709 *d.* Cambrian Bloom 70106 by Nyn Hitchin Duke 14782.

Class 7.—*Shire Mares, foaled in or after* 1915, *with Foals at foot.* [4 entries.]

56 I. (£20.)—PENDLEY STOCK FARMS, Pendley, Tring, Herts., for **Pendley Duchess** 86010, bay, foaled in 1915, bred by J. G. Williams, Pendley Manor, Tring: *s.* Norbury Menestrel 23543, *d.* Halstead Duchess 7th 67223 *by* Redlynch Forest King 23626. [Foal *by* Champion's Goalkeeper 30296.]

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[1] Special District Prize of £10 given by a Member of the R.A.S.E. for the best Stallion in Classes 1 to 3, the property of an Exhibitor residing in Wales or Monmouthshire.

[2] Special District Prize of £10 given by a Member of the R.A.S.E for the best Mare or Filly in Classes 4 to 8, the property of an Exhibitor residing in Wales or Monmouthshire.

[3] Champion Gold Medal, and £5 to the Reserve, given by the Shire Horse Society for the best Mare or Filly in Classes 4 to 8. A Prize of £5 is also given by the Shire Horse Society to the Breeder of the Champion Mare or Filly, provided the Breeder is a Member of the Shire Horse Society, and the Dam of the animal is registered in the Shire Horse Stud Book.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 8.—*Shire Mares, foaled in or before* 1914, *with Foals at foot.*
[6 entries.]

62 I. (£20.)—**PENDLEY STOCK FARMS**, Pendley, Tring, Herts., for **Pendley Royal Princess** 82514, bay, foaled in 1914, bred by J. G. Williams, Pendley Manor, Tring; *s.* Norbury Menestrel 23543, *d.* Bardon Forest Princess 55968 *by* Lockinge Forest King 18867. [Foal *by* Babingley Nulli Secundus 26993.]

58 II. (£15.)—**WILLIAM JOHN CUMBER**, Theale, Berks., for **Lockinge Rosa** 61016, bay, foaled in 1908, bred by Lady Wantage, Lockinge, Wantage; *s.* Lockinge Sweet William 20654, *d.* Lockinge Rosalind 51557 *by* Lockinge Forester 19777. [Foal *by* Norbury Menestrel 23543.]

60 III. (£10.)—**ROBERT L. MOND**, Combe Bank, near Sevenoaks, Kent, for **Sundridge Coming Queen** 83161, bay, foaled in 1914, bred by J. E. Thurman, Birkholme, Grantham; *s.* Tandridge Coming King 29926, *d.* Birkholme Fuchsia 53045 *by* Lockinge Albert 15695. [Foal *by* Champion's Combination 33096.]

Class 9.—*Shire Colt Foals, the produce of Mares entered in Classes* 7 *or* 8.
[5 entries.]

66 I. (£10.)—**ROBERT L. MOND**, Combe Bank, near Sevenoaks, Kent, for bay, foaled April 27; *s.* Champion's Combination 33096, *d.* Sundridge Coming Queen 83161 *by* Tandridge Coming King 29926.

67 II. (£5.)—**PENDLEY STOCK FARMS**, Pendley, Tring, Herts., for bay, foaled May 10; *s.* Babingley Nulli Secundus 26993, *d.* Pendley Royal Princess 82514 *by* Norbury Menestrel 23543.

Class 10.—*Shire Filly Foals, the produce of Mares entered in Classes* 7 *or* 8.
[4 entries.]

71 I. (£10.)—**PENDLEY STOCK FARMS**, Pendley, Tring, Herts, for **Pendley Duchess 3rd**, bay, foaled Feb. 25, bred by J. G. Williams, Pendley Manor, Tring; *s.* Champion's Goalkeeper 30.96, *d.* Pendley Duchess 86010 *by* Norbury Menestrel 23543.

69 II. (£5.)—**WILLIAM JOHN CUMBER**, Theale, Berks., for bay, foaled May 1; *s.* Norbury Menestrel 23543, *d.* Lockinge Rosa 61016 *by* Lockinge Sweet William 20654.

Class 11.—*Shire Geldings by Registered Sire, foaled in or before* 1916.
[No entry.]

Clydesdales.[1]

Class 12.—*Clydesdale Stallions, foaled in* 1918. [3 entries.]

74 I. (£15, & R.N. for Champion.[2])—**JAMES KILPATRICK**, Craigie Mains, Kilmarnock, for bay, bred by Dickens & Butler, Silverdale, Lancashire; *s.* Bonnie Buchlyvie 14032, *d.* Dunure Voice 38671 *by* Apukwa 14567.

75 II. (£10.)—**H. E. ROBERTS**, Monk Castle, Southwaite, Carlisle, for **Foch**, brown; *s.* Dunure Footprint 15203, *d.* Monk Rosa 39863 *by* Auchenflower 12007.

Class 13.—*Clydesdale Stallions, foaled in* 1917. [5 entries.]

79 I. (£15, & Champion.[2])—**CAPT. A. M. MONTGOMERY**, Nether Hall, Castle Douglas, for **Carry On**, bay, bred by Rev. J. J. Calder, Manse of Cairnie, N.B.; *s.* Signet (16816), *d.* Daisy of Bruckles (2724) *by* Everlasting (11331)

77 II. (£10.)—**JAMES KILPATRICK**, Craigie Mains, Kilmarnock, for **Craigie Zenith**, bay bred by Gavin Paterson, High Park, Coylton; *s.* Bonnie Buchlyvie 14032, *d.* Craigie Zena 39278 *by* St. Clair 14347.

Class 14.—*Clydesdale Stallions, foaled in* 1916. [2 entries.]

81 I. (£15.)—**CAPT. A. M. MONTGOMERY**, Nether Hall, Castle Douglas, for **Controller**, bay, bred by W. Strachan, Jackston, Gawrie, Banff; *s.* Everlasting 11331, *d.* Jackson Bertha 21875 *by* Hillhead Chief 10774.

Class 15.—*Clydesdale Fillies, foaled in* 1918. [1 entry.]
[No award.]

Class 16.—*Clydesdale Fillies, foaled in* 1917. [5 entries.]

86 I. (£15, & R.N. for Champion.[3])—**JAMES KILPATRICK**, Craigie Mains, Kilmarnock, for **Craigie Sunray**, bay, bred by J. P. Sleigh, St. John's Wells, Fyvie; *s.* Bonnie Buchlyvie 14032, *d.* Wells Lady Ray 44060 *by* Dunure Footprint 15203.

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[1] £80 towards these Prizes were given by the Clydesdale Horse Society.

[2] Champion Prize of £10 given by the Clydesdale Horse Society for the best Stallion in Classes 12-14.

[3] Champion Prize of £10 given by the Clydesdale Horse Society for the best Mare or Filly in Classes 15-18.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

88 II. (£10.)—ROBERT MARSHALL, The Mains of Kilmarnock, by Alexandria, N.B., for **Lochlands Lady Mary**, brown and white, bred by W. D. Mc ubbin, Lochlands, Maybole; *s.* Dunure Footprint 15203, *d.* Lochlands Lady Jean 29945 *by* Baron's Chief 10971.

84 III. (£5.)—THE COUNTY LIVE STOCK INSURANCE ASSOCIATION, LTD., The County Stud Farm, Sandburn, Stockton-on-the-Forest, York, for **County Silver Face**, light bay; *s.* Silver Shield 16819, *d.* Phyllis of Byers Garth 24127 *by* Royal Crest 12322.

Class 17.—*Clydesdale Fillies, foaled in* 1916.

[No entry.]

Class 18.—*Clydesdale Mares, with Foals at foot.* [2 entries.]

89 I. (£15, & Champion.[1])—F. J. DICKENS & F. CALVERT BUTLER, Woodlands, Silverdale, Lancashire, for **Rosalind**, black, foaled in 1913, bred by W. Mackenzie, Elgin; *s.* Dunure Footprint 15203, *d.* Rose of Allendale 29990 *by* Allandale 12418 [Foal *by* Phillipine 18044.]

90 II. (£10.)—H. E. ROBERTS, Monk Castle, Southwaite, Carlisle, for **Snowflake**, dark roan, foaled in 1916; *s.* Dunure Footprint 15203, *d.* Emmeline 36276 *by* Marcellus 11110. [Foal *by* Auchenflower 12007.]

Class 19.—*Clydesdale Foals, the produce of Mares entered in Class* 18.

[2 entries.]

91 I. (£10.)—F. J. DICKENS & F. CALVERT BUTLER, Woodlands, Silverdale, Lancashire, for black colt, foaled May 19; *s.* Phillipine 18044, *d.* Rosalind *by* Dunure Footprint 15203.

92 II. (£5.)—H. E. ROBERTS, Monk Castle, Southwaite, Carlisle, for bay filly, foaled May 12; *s.* Auchenflower 12007, *d.* Snowflake *by* Dunure Footprint 15203.

Class 20.—*Clydesdale Geldings, by Registered Sires, foaled in or before* 1916.

[2 entries.]

93 I. (£15.)—SCOTTISH CO-OPERATIVE WHOLESALE SOCIETY, LTD., 95 Morrison Street, Glasgow, for **Willie**, black, bred by John Cooper, Muchalls, Stonehaven, Aberdeenshire; *s.* Dunedin 12[illegible]5[illegible].

94 II. (£10.)—R. W. J. SUTHERLAND, Gadairwen, Croesfaen, Glam., for **Captain**, bay, foaled in 1915, bred by James Mackenzie, Helmsdale, Sutherlandshire, N.B.; *s.* Revelanta 11876.

Suffolks.[2]

Class 21.—*Suffolk Stallions, foaled in* 1918. [6 entries.]

95 I. (£15.)—CAPT. RAYMOND J. CATCHPOLE, Darsham Hall, Saxmundham, Suffolk, for **Darsham Samson** 4799; *s.* Darsham Sheik 4139, *d.* Darsham Smart 7603 *by* Cupbearer 3086.

100 II. (£10.)—A. CARLYLE SMITH, Sutton Hall, Woodbridge, Suffolk, for **Ashmoor Beau** 4824, bred by Hon. E. G. Pretyman, Orwell Park, Ipswich; *s.* Morston Swell 4271, *d.* Orwell Belle 5621 *by* Birtley Marquis 2752.

96 III. (£5.)—THE MARQUIS OF GRAHAM, Easton Park, Wickham Market, Suffolk, for **Easton El Menc[illegible]** 4778; *s.* Sudbourne Arabi, 3287, *d.* Easton Sultana 9115 *by* Sudbourne Sultan 3224.

99 R. N.—SIR CUTHBERT QUILTER, BT., Methersgate Hall, Woodbridge, Suffolk, for **Bawdsey Raks** 48[illegible]3.

Class 22.—*Suffolk Stallions, foaled in* 1917. [7 entries.]

105 I. (£15, & R. N. for Champion.[3])—ARTHUR T. PRATT, Morston Hall, Trimley, Ipswich, for **Morston J.P.** 4756, bred by C. C. Smith, Trimley; *s.* Morston Gold Guard 4234, *d.* Trimley Princess 7474 *by* Rendlesham Nimrod 3677.

104 II. (£10.) ARTHUR T. PRATT, for **Morston Golden Seal** 4742, bred by Mrs. Craufield, Burstall, Ipswich; *s.* Morston Gold Guard 4234, *d.* Morston Magpie 8392 *by* Baronet 39[illegible]2.

102 III. (£5.)—THE MARQUIS OF GRAHAM, Easton Park, Wickham Market, Suffolk, for **Easton Sheik** 4697; *s.* Sudbourne Arabi 3287, *d.* Easton Sultana 9115 *by* Sudbourne Sultan 3224.

107 R. N.—SIR CUTHBERT QUILTER, BT., Methersgate Hall, Woodbridge, Suffolk, for **Bawdsey Vulcan**.

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[1] Champion Prize of £10 given by the Clydesdale Horse Society for the best Mare or Filly in Classes 15-18.

[2] £50 towards these Prizes were given by the Suffolk Horse Society.

[3] The "Coronation" Silver Challenge Cup, value £50, given for annual competition by the Suffolk Horse Society for the best Stallion in Classes 21-23.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 23.—*Suffolk Stallions, foaled in* 1916. [4 entries.]

108 I. (£15, & Champion.[1])—THE MARQUIS OF GRAHAM, Easton Park, Wickham Market, Suffolk, for **Sudbourne Artemas** 4573, bred by Kenneth Clark, Sudbourne, Orford; *s.* Sudbourne Arabi 3287, *d.* Sudbourne Queen of Hearts 5507 *by* Sudbourne Brownie 2886.

110 II. (£10.) ARTHUR T. PRATT, Morston Hall, Trimley, Ipswich, for **War Boy** 4672, bred by W. Rush, Stradbroke; *s.* Beatty Cupbearer 4044, *d.* Smilu 7520 *by* Abbot 2862.

111 III. (£5.)—SIR CUTHBERT QUILTER, BT., Methersgate Hall, Woodbridge, Suffolk, for **Bawdsey Earl** 4736; *s.* Earl Grey 4219, *d.* Lady Jane 7177 *by* Bawdsey Harvester 3076.

109 R. N.—MRS. PHILIP HUNLOKE, Wingerworth Hall, Chesterfield, Derbyshire, for **Shannon.**

Class 24.—*Suffolk Fillies, foaled in* 1918. [7 entries.]

112 I. (£15.)—CAPT. RAYMOND J. CATCHPOLE, Darsham Hall, Saxmundham, for **Darsham Ursula** 9763; *s.* Darsham Sheik 4139, *d.* Darsham Usk 7518 *by* Cupbearer 3086.

116 II. (£10.)—ARTHUR T. PRATT, Morston Hall, Trimley, Ipswich, for **Morston Denise** 9946; *s.* Morston Gold Guard 4224, *d.* Smart 7131 *by* Rendlesham Goldsmith 3095.

114 III. (£5.)—S. FITZROY, Hanstead Lodge, Bury St. Edmunds, for **Hanstead Sweetbriar** 9929; *s.* Haskerton Prince of Orange 4282, *d.* Rose 6990 *by* Farnham Comet 3371.

118 R. N.—JOSEPH WATSON, Sudbourne Hall, Orford, Suffolk, for **Sudbourne Cybele.**
C.—113, 115.

Class 25.—*Suffolk Fillies, foaled in* 1917. [9 entries.]

126 I. (£15.)—JOSEPH WATSON, Sudbourne Hall, Orford, Suffolk, for **Ashmoor Bellona** 9448, bred by A. C. Smith, Sutton Hall, Woodbridge; *s.* Sudbourne Arab 3309, *d.* Ashmoor Belle *by* Taylor's Majestic 3327.

122 II. (£10.)—ARTHUR T. PRATT, Morston Hall, Trimley, Ipswich, for **Morston Duchess** 9468; *s.* Morston Gold Guard 4224, *d.* Smart 7131 *by* Rendlesham Goldsmith 3095.

123 III. (£5.)—SIR CUTHBERT QUILTER, BT., Methersgate Hall, Woodbridge, Suffolk, for **Bawdsey Maid Marion** 9508; *s.* Bawdsey Hay 4188, *d.* Bawdsey Mary 4910 *by* Prince Wedgewood 2364.

127 R. N.—JOSEPH WATSON, for **Blackburn Doris 2nd.**
H. C.—119. C.—120.

Class 26.—*Suffolk Fillies, foaled in* 1916. [8 entries.]

128 I. (£15.)—CAPT. RAYMOND J. CATCHPOLE, Darsham Hall, Saxmundham, Suffolk, for **Darsham Duchess** 8906; *s* Darsham Sheik 4139, *d.* Darsham Princess 7590 *by* Border Minstrel 2287.

133 II. (£10.)—SIR CUTHBERT QUILTER, BT., Methersgate Hall, Woodbridge, Suffolk, for **Bawdsey Juno** 8911; *s.* Bawdsey Harvest King 3879, *d.* Sutton Venus 5693 *by* Hewitt's Mars 2434.

134 III. (£5.)—A. CARLYLE SMITH, Sutton Hall, Woodbridge, Suffolk, for **Ashmoor Anemone** 8903; *s.* Sudbourne Arab 3309, *d.* Violet 5082 *by* Ironside 2759.

135 R. N.—A. CARLYLE SMITH, for **Ashmoor Belva.**
H. C.—129.

Class 27.—*Suffolk Mares, with Foals at foot.* [9 entries.]

144 I. (£15.)—JOSEPH WATSON, Sudbourne Hall, Orford, Suffolk, for **Sudbourne Moonlight** 8623, foaled in 1915, bred by Kenneth M. Clark, Sudbourne Hall, Orford; *s.* Sudbourne Peter 3935, *d.* Sudbourne Twilight 7219 *by* Sudbourne Arabi 3287. [Foal *by* Sudbourne Beau Brocade 4235.]

143 II. (£10.)—JOSEPH WATSON, for **Sudbourne Model** 7974, foaled in 1913, bred by Kenneth M. Clark; *s.* Sudbourne Arabi 3287, *d.* Sudbourne Moggy 6744 *by* Dennington Cupbearer 3028. [Foal *by* Sudbourne Beau Brocade 4235.]

139 III. (£5.)—SIR CUTHBERT QUILTER, Methersgate Hall, Woodbridge, Suffolk, for **Bawdsey Minerva** 6449, foaled in 1908, bred by the late Sir Cuthbert Quilter, Bt.; *s.* Bawdsey Harvester 3076, *d.* Sutton Venus 5693 *by* Hewitt's Mars 2434. [Foal *by* Earl Grey 4219.]

136 R. N.—E. R. DEBENHAM, Bladen Dairy Farms, Aff Piddle, Dorset, for **Bredfield Madge.**

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[1] The "Coronation" Silver Challenge Cup, value £50, given for annual competition by the Suffolk Horse Society for the best Stallion in Classes 21-23.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 28.—*Suffolk Foals, the produce of Mares entered in Class 27.* [9 entries.]

153 I. (£10.)—JOSEPH WATSON, Sudbourne Hall, Orford, Suffolk, for colt, foaled March 14; *s.* Sudbourne Beau Brocade 4235, *d* Sudbourne Model 7874 *by* Sudbourne Arabi 3287.

154 II (£5.)—JOSEPH WATSON, for colt, foaled February 14; *s* Sudbourne Beau Brocade 4235, *d.* Sudbourne Moonlight 8823 *by* Sudbourne Peter 3955.

146 III (£3.)—E. R DEBENHAM, Bladen Dairy Farms, Aff Piddle, Dorset, for colt, foaled April 24; *s.* Bladen Redstart 4510, *d.* Bredfield Madge 6695 *by* Boulge Mikado 3258.

149 R. N.—SIR CUTHBERT QUILTER, BT., Methersgate Hall, Woodbridge, Suffolk.

Percherons.[1]

Class 29.—*Percheron Stallions, of any age.* [16 entries.]

163 I. (£20.)—HENRY OVERMAN, Kipton House, Weasenham, Swaffham, Norfolk, for **Misanthrope** 110649, grey, foaled in 1912, bred by Bourlier, St. Martin d'Ecubler Laigh, Montagne l'Orne, France: *s.* Dognet-ex-Sapeux 60641, *d.* Dantone 60322 *by* Rival 5065.

155 II. (£10.)—LIEUT.-COL. SIR MERRIK R. BURRELL, BT., Knepp Castle, West Grinstead, for **Noel** 112033, grey, foaled in 1913, bred by J. Pelletrée, Linglères, Norquest-le-Rotson; *s.* Jeudi 85571, *d.* Bertine 57833 *by* Egyptian 43775.

167 III. (£5.)—LIEUT.-COL. THYNNE, TREVOR WILLIAMS & SIR JOHN RAMSDEN, Muntham Court, Worthing, Sussex, for **Quapulet** 129491, dark grey, foaled in 1916, bred by N. Crenier: *s.* Languier 100649, *d.* Hermoine 73775 *by* Guibet 57895.

164 IV. (£3.)—R. E. PARKER, Easton, Norwich, for **Newport 2nd**, black, foaled in 1915 bred by George Lane, Calgary, Alberta: *s.* Holefox 75867, *d.* Genistini 69270 *by* Dubonnet 51671.

161 R. N.—THE EARL OF LONSDALE, Barley Thorpe, Oakham, for **Lagor**.
H. C.—157, 159. C.—168.

Class 30.—*Percheron Mares, with Foals at foot.* [4 entries.]

171 I. (£20.)—THE EARL OF LONSDALE, Barley Thorpe, Oakham, for **Kalidaca**, grey, foaled in 1910, bred by A. Hamelin, Bas Buret, Commune de la Bellavilliers, Orne; *s.* Sistori, *d.* Taupette. [Foal *by* Lagor 100512.]

172 II. (£10.)—THE EARL OF LONSDALE, for **Mesniere**, white, foaled in 1912, bred by A. Bignon, Aulnays, Commune de la Mesniere, Orne; *s.* Danvieur, *d.* Couvieur *by* Mulotte. [Foal *by* Lagor 100512.]

174 III. (£5.)—SIR JOHN RAMSDEN, Bulstrode, Gerrards Cross, Bucks., for **Plane** 125988, grey, foaled in 1915, bred by M. Huard; *s.* Kaltas, *d.* Sonora. [Foal *by* Oremus 120342.]

Class 31.—*Percheron Barren or Maiden Mares, of any age.* [20 entries.]

190 I. (£20.)—LORD STALBRIDGE, Motcombe House, Shaftesbury, for **Pigeonette** 125224, grey, foaled in 1915, bred by M. E. Hamelin, Mortagne, France; *s.* Loris 100377, *d.* Roulette 67531 *by* Danseur 46225.

176 II. (£10.)—JOHN DRAGE, Chapel Brampton, Northampton, for **Oie** 123574, grey, foaled in 1914.

183 III. (£5.)—HENRY R. OVERMAN, Brampton Ash, Market Harborough, for **Niobe** 111970, grey, foaled in 1913, bred by F. Perriott, La Ronce, France; *s.* Jean Bart 86379, *d.* Imposée 80411 *by* Actionnaire 64675.

178 IV. (£3.)—SIR HENRY HOARE, BT., Stourhead, Zeals, Wilts, for **Livourne**, 98789, grey, foaled in 1911, bred by Casse et Petite, Binetierre, La Sarthe, France *s.* Houleux, 14223, *d.* Bleue 49492 *by* Fier à Bras 13555.

175 R.N.—LIEUT.-COL. SIR MERRIK R. BURRELL, BT., Knepp Castle, West Grinstead, for **Orgere**.
H. C.—181, 186. C.—182.

Hunters.[2]

Class 32.—*Hunter Colts or Geldings, foaled in* 1918. [4 entries.]

195 I. (£15.)—MAJOR CLIVE BEHRENS, Swinton Grange, Malton, Yorks., for **White Thorn**, chestnut gelding; *s.* Crathorne (vol. 18, p. 854, G.S.B.) *d.* Whinflower 3801 *by* The Hero (vol. 18, p. 83. G S.B.).

198 II. (£10.)—LORD TREDEGAR, Tredegar Park, Newport, Mon., for **Union Jack**, red roan colt; *s.* Bluestone, *d.* Seafoam *by* Goblet.

197 III. (£5.)—LORD TREDEGAR, for **Smuggler**, bay colt: *s.* Brandimintine, *d.* Seagull *by* Kettledrum.

R.N.—MAJOR DAVID DAVIES, M.P., Broneirion, Llandinam, Mont., for **Hermit**.

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[1] £90 towards these Prizes were given by the British Percheron Horse Society.

[2] £160 towards these Prizes were given by the Hunters' Improvement and National Light Horse Breeding Society.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 33.—*Hunter Geldings, foaled in* 1917. [3 entries.]

200 I. (£15.)—LORD GLANELY, The Court, St. Fagans, Glam., for **Chat Chat**, bay, bred by J. Masker, Thetford, Norfolk; *s.* Galloping Simon, *d.* Chattan.

201 II. (£10.)—DAVID E. JOHN, 209, Cathedral Road, Cardiff, for **Hesper**, dark bay; *s.* Sanglamore (vol. 22, p. 381, G.S.B.], *d.* Lady.

199 R. N.—JOHN DANIEL, 31 Cathedral Road, Cardiff, for **Panzo.**

Class 34.—*Hunter Geldings, foaled in* 1916. [4 entries.]

202 I. (£15.)—MAJOR CLIVE BEHRENS, Swinton Grange, Malton, Yorks, for **Hawthorn**, brown; *s.* Crathorne (vol. 20, p. 445, G.S.B.), *d.* Whinflower 3801 *by* The Hero (vol. 18, p. 83, G.S.B.).

205 II. (£10.)—LORD TREDEGAR, Tredegar Park, Newport, Mon., for **Laity**, brown; *s.* Sanctuary, *d.* Lay *by* Knight of Malta.

203 III. (£5.)—JOHN HENRY DEAN, Aylesbury House, Packwood, Warwickshire, for **Raider** 397, chestnut, bred by A. E. Bowen, Lodge Paddocks, Hockley Heath; *s.* Wales (vol. 18, p. 854, G.S.B.), *d.* Tangerine.

Class 35.—*Hunter Fillies, foaled in* 1918. [7 entries.]

208 I. (£15.)—LIEUT.-COL. SIR MERRIK R. BURRELL, BT., Knepp Castle, West Grinstead, Sussex, for **Crinoline**, bay brown; *s.* Cock-a-hoop vol. 21, p. 7, G.S.B.), *d.* Lovey Mary 4247 *by* Castlenock (2).

206 II. (£10.)—MAJOR CLIVE BEHRENS, Swinton Grange, Malton, Yorks, for **Heroine**, brown; *s.* Crathorne (vol. 20, p. 445, G.S.B.), *d.* Heather 3rd 4106 *by* Scotch Sign.

211 III. (£10.)—LORD TREDEGAR, Tredegar Park, Newport, Mon., for **Repose**, bay; *s.* Traveller (vol. 19, p. 64, G.S.B), *d.* Lay *by* Knight of Malta.

209 R. N.—H. LE D. SPENCELY, Ashley House, Box, for **Istar.**

Class 36.—*Hunter Fillies, foaled in* 1917. [5 entries.]

217 I. (£15, & R.N. for Champion.[1])—W. G. CLARKE, Debden Hall, Loughton, Essex, for **Viewfinder** 5613, chestnut, bred by the late W. R. Clark, Debden Hall, Loughton; *s.* Explorer (vol. 21, p. 861, G.S.B.), *d.* Flash 2nd 3956.

215 II. (£10.)—LIEUT.-COL. SIR MERRIK R. BURRELL, BT., Knepp Castle, West Grinstead, Sussex, for **Blood Ruby**, brown; *s.* The Best 147, *d.* Princess Ruby (vol. 21, p. 1068, G.S.B.) *by* Red Prince.

214 III. (£10.)—ALBERT ERNEST BOWEN, Lodge Paddocks, Hockley Heath, Warwickshire, for **Birthday 2nd** 5487, dark grey; *s.* Wales (vol. 18, p. 854, G.S.B), *d.* Carnation 3rd, 5488 *by* Fitzwilliam.

218 R. N.—J. HAROLD WATSON, Green Hill, Kidderminster, for **Watchful.**

Class 37.—*Hunter Fillies, foaled in* 1916. [6 entries.]

221 I. (£15, & Champion[1].)—LIEUT.-COL. SIR MERRIK R. BURRELL, BT., Knepp Castle, West Grinstead, Sussex, for **The Belle** 5330, bay; *s.* Hanover Square (vol. 21, p. 706, G.S.B.), *d.* Surprise 3014 *by* Silver King 54.

220 II. (£10.)—JESSE BURNETT, New House, Shipton, Much Wenlock, Salop, for chestnut; *s.* Cawbeen (vol. 19, p. 121, G.S.B.), *d.* Alice R. 4498 *by* Glory Smitten (vol. 16, p. 188, G.S.B.).

222 III. (£10.)—F. G. D. COLMAN, Great Burgh, Burgh Heath, Epsom, Surrey, for bay; *s.* Rockaway (vol. 21, p. 273, G.S.B.).

225 R. N.—H. LE D. SPENCELY, Ashley House, Box, for **Whisper.**

Class 38.—*Hunter Mares (Novice), foaled in or after* 1911, *with Foals at foot, up to from* 12 *to* 14 *stone.* [2 entries.]

226 I. (£20.)—FRANK B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for **Princess Mary**, brown, foaled in 1912, bred by Marcus Kendall, Ness Hall, Nunnington, York; *s.* Selby Royal, *d.* Wild Mint *by* Peppermint. [Foal *by* Squadron Leader.]

227 II. (£15.)—FRANK B. WILKINSON, for **Radiance**, brown, foaled in 1913. [Foal *by* Peter Pan.]

Class 39.—*Hunter Mares (Novice), foaled in or after* 1911, *with Foals at foot, up to more than* 14 *stone.*

[No entry.]

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[1] Champion Gold Medal given by the Hunters' Improvement and National Light Horse Breeding Society for the best Filly not exceeding three years old in Classes 35-37, which must be registered in the Hunter Stud Book, or the entry tendered within a month of the Award.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 40.—*Hunter Mares with Foals at foot, up to from* 12 *to* 14 *stone.* [3 entries.]

230 I. (£20, & R. N. for Champion.[1])—WILLIAM H. SHIERS, Needwood House, Burton-on-Trent, for **Bonny Rose** 5610 (vol. 21, p. 885, G S.B.), chestnut, foaled in 1904, bred by Major Balfe; *s.* Bonarosa, *d.* Wygelia *by* Clear-the-Way. [Foal *by* Simond.]

228 II. (£15.[1]) MRS. AIKIN, The Hill, Bishop's Frome, Worcester, for **Hard Times**, bay, foaled in 1907; *s.* Crackenthorpe (vol. 16, p. 449, G.S.B.). [Foal *by* Jingling Geordie.]

Class 41.—*Hunter Mares with Foals at foot, up to more than* 14 *stone.* [2 entries.]

232 I. (£20, & Champion.[1])—LORD TREDEGAR, Tredegar Park, Newport, Mon., for **Landscape**, chestnut, foaled in 1909, bred by H. L. Hardwicke, Tytherington Grange, Falfield, Glos.; *s.* Yard Arm, *d.* Focus *by* Landgrave. [Foal *by* Sanctuary.]

231 II. (£15.)—MAJOR DAVID DAVIES, M.P., Broneirion, Llandinam, Mont., for **Maid Marian** (vol. 21, p 589, G.S.B.) foaled in 1905, bred by P J. O'Connor; *s.* Littlejohn, *d.* The Only One *by* Laveno. [Foal *by* Great Surprise (vol. 21, p 34, G.S.B).]

Class 42.—*Hunter Colt Foals, the produce of Mares in Classes* 38 *to* 41. [5 entries.]

237 I. (£10.)—FRANK B WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for bay, foaled April 20; *s.* Peter Pan (vol. 20, p. 664, G.S B.), *d.* Radiance *by* Selby Royal

236 II. (£5.)—LORD TREDEGAR, Tredegar Park, Newport, Mon., for **Landlord**, bay, foaled May 1; *s.* Sanctuary, *d.* Landscape *by* Yard Arm.

233 III. (£3.)—MRS. AIKIN, The Hill, Bishop's Frome, Worcester, for brown, foaled March 26; *s.* Jingling Geordie (vol. 22, p. 543, G.S.B.), *d.* Hard Times *by* Crackenthorpe (vol. 16, p. 49, G.S.B.).

235 R. N.—WILLIAM H. SHIERS, Needwood House, Burton-on-Trent.

Class 43.—*Hunter Filly Foals, the produce of Mares in Classes* 38 *to* 41. [2 entries.]

239 I. (£10.)—FRANK B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for bay, foaled March 29; *s.* Squadron Leader (vol. 17, p. 607, G.S.B.), *d.* Princess Mary *by* Selby Royal.

Polo and Riding Ponies.[2]

Class 44.—*Polo and Riding Pony Colts, Fillies or Geldings, foaled in* 1918. [8 entries.]

243 I. (£10.)—G. NORRIS MIDWOOD, The Grange, North Rode, Congleton, for **The Marne** (Supp. 1918), chestnut colt: *s.* Little Corona 814, *d.* Sligo 2nd 2524.

246 II. (£5.)—NOEL H. WILLS, Misarden Park, Cirencester, Glos., for **Watchful Miss**, bay filly; *s.* Cherry Tint 671, *d.* Watch Me (Supp. 917) *by* Fugleman.

247 III. (£3.)—NOEL H. WILLS, for **Wild Marauder**, chestnut colt; *s.* Cherry Tint 671, *d.* Bowery (Supp. 1915) *by* Bowden.

244 R. N.—J. MUMFORD, Knightcote, Leamington, for **Fire Blaze.**

Class 45.—*Polo and Riding Pony Colts, Fillies or Geldings, foaled in* 1917. [7 entries.]

250 I. (£10, & Champion.[3])—MAJOR J. R. B. BRANSON, Headley Mill Farm, Bordon, Hants, for **Amber 2nd** (Supp. 1918), chestnut filly: *s.* Little Corona 814, *d.* Amberite 3053.

252 II. (£5.)—TRESHAM GILBEY, Whitehall, Bishop's Stortford, for **Reform**, bay colt: *s.* Rack Rent, *d.* Good Girl 2nd.

249 III. (£3.)—MAJOR J. S. BAKEWELL, Cromhall, Charfield, R.S.O., Glos., for **Strife**, chestnut filly; *s.* Darigal, *d.* Robbery 2571, *by* Gold Medallist.

251 R. N.—MISS IRENE FOSTER, Canwell Hall, Sutton Coldfield, for **St. Omer.**

Class 46.—*Polo Pony and Riding Pony Stallions, foaled in or before* 1916, *not exceeding* 15 *hands.* [9 entries.]

262 I. (£10, & Champion.[4])—J. MUMFORD, Knightcote, Leamington, for **Prairie Fire** 755, bay, foaled in 1907, bred by L. Neumann; *s.* Flying Fox 659, *d.* Firelight 241 *by* Fitz James.

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[1] Champion Gold Medal given by the Hunters' Improvement and National Light Horse Breeding Society, for the best Mare four years old and upwards in Classes 38 to 41, which must be registered in the Hunter Stud Book, or the entry tendered within a month of the Award.

[2] £25 towards these Prizes were given by the National Pony Society.

[3] Champion Gold Medal given by the National Pony Society for the best Mare or Filly in Classes 44, 45, 47 and 48.

[4] Champion Gold Medal given by the National Pony Society for the best Colt or Stallion in Classes 44-46.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

261 **II. (£5, & R.N. for Champion.[1])**—CAPT. BERTRAM W. MILLS, Red Hill Farm, Edgware, for **Arthur D.** 593, bay, foaled in 1908, bred by R. Botterill; *s.* Pride, *d.* Maquay *by* Florentine.

256 **III (£3.)**—MRS. F. E. G. BETTY, Dolygarreg, Llandovery, S. Wales, for **Sahara** 847, grey, foaled in 1909.

259 **R. N.**—TRESHAM GILBEY, Whitehall, Bishop's Stortford, for **Goodward.**

Class 47.—*Polo and Riding Pony Fillies or Geldings, foaled in* 1916. [7 entries.]

264 **I. (£10.)**—MAJOR J. S. BAKEWELL, Cromhall, Charfield, R.S.O., Glos., for **Cactus** (Supp. 1916), chestnut gelding; *s.* Favourite 759, *d.* Cochineal 2894 *by* Bacton Lad.

265 **II. (£5.)**—MAJOR J. S. BAKEWELL, for **Fly** (Supp. 1916), chestnut gelding; *s.* Favourite 759, *d.* Flu 2938 *by* White Wings 464.

268 **III. (£3.)**—TRESHAM GILBEY, Whitehall, Bishop's Stortford for **Nimrod**, bay gelding, bred by the late Lord Lucas, Wrest Park, Ampthill, Beds; *s.* Jacko, *d.* Nimble.

266 **R. N.**—MRS. HUGH CORBET, Downton, Shrewsbury, for **Gold Flake.**

Class 48.—*Polo and Riding Pony Mares, with Foals at foot, not exceeding* 14·2 *hands.* [7 entries.]

274 **I. (£10, & R.N. for Champion.[2])**—CAPT. M. J. KINGSCOTE, Watermoor House, Cirencester, Glos., for **Gwyredd** 2562, chestnut, foaled in 1909, bred by V. T. Taylor, Steinbrook House, Chippenham; *s.* Wales, *d.* Creosote.

275 **II. (£5, & R.N. for B.M.[3])**—G. NORRIS MIDWOOD, The Grange, North Road, Congleton, for **Rathlea** 3504, chestnut: *s.* Raeburn. [Foal *by* Little Corona 814.]

277 **III. (£3.)**—MRS. J. OSCAR MUNTZ, Foxhams, Horrabridge, South Devon, for **Bush Girl** 2872, chestnut, foaled in 1907, bred by Capt. R. Brassey, Cottesbrook, Northampton; *s.* The Squire, *d.* Wild Girl. [Foal *by* Arthur's Pride 861.]

271 **R. N. & B.M.[3]**—MAJOR J. S. BAKEWELL Cromhall, Charfield, R.S.O., Glos.

Cleveland Bays.

Class 49.—*Cleveland Bay Stallions, any age.* [3 entries.]

282 **I. (£10.)**—ROBERT KITCHING, Hungate House, Pickering, Yorks., for **Charmer** 1737, foaled in 1913, bred by John Hill, Nipe House, Hawsker, Whitby; *s.* Cholderton Luck 1712, *d.* Barnby Star 1310 *by* Rosedale 1692.

280 **II. (£5.)**—GEORGE ELDERS, JUN., Hawthorndale Farm, Whitby, Yorks., for **Aislaby Lad** 1722, foaled in 1911, bred by George Elders, Toft House, Aislaby; *s.* Morton King 1699, *d.* Lady Stainthorpe 718 *by* Lord Hillingdon 986.

281 **R. N.**—WILLIAM GRAYSON, Normanby House, Pickering, Yorks., for **Priory Monk.**

Class 50.—*Cleveland Bay Mares, with Foals at foot.* [1 entry.]

283 **I. (£10.)**—GEORGE ELDERS, JUN., Hawthorndale Farm, Whitby, Yorks., for **Woodland Starlight** 1328, foaled in 1908, bred by George Grandage, late of Moor Croft, Yeadon; *s.* Woodland Pride 1659, *d.* Woodland Briar 1269 *by* King of the East 1364. [Foal *by* Aislaby Lad 1722.]

Yorkshire Coach Horses.

Class 51.—*Yorkshire Coach Horse Stallions, any age.* [6 entries.]

289 **I. (£10.)**—JOHN LETT, Cleveland Stud Farm, Rillington, Yorks., for **Rillington Victor** 2536, foaled in 1910, bred by W. Wood, Bilsdale Helmsley; *s.* Breaston Prince 2451, *d.* Queen's Rocket 948 *by* Beadlam Prince 2248.

286 **II. (£5.)**—WILLIAM GRAYSON, Normanby House, Pickering, Yorks., for **Gay Cavalier** 2598, foaled in 1913, bred by James Ward, Grosmont, S.O.; *s.* Breaston Prince 2451, *d.* Fanny 1310 *by* McNeill's Barnaby 1832.

288 **R. N.**—JOHN LETT, for **Rillington President.**
H. C.—284.

Class 52.—*Yorkshire Coach Horse Mares, with Foals at foot.* [1 entry.]

290 **I. (£10.)**—GEORGE ELDERS, JUN., Hawthorndale Farm, Whitby, Yorks., for **Aislaby Starlight** 1172, foaled in 1909, bred by George Elders, Toft House, Aislaby; *s.* Aislaby Pride 2463, *d.* Hawthorn Darling 1169 *by* King Fred 2430. [Foal *by* Aislaby Lad 1722.]

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[1] Champion Gold Medal given by the National Pony Society for the best Colt or Stallion in Classes 44-46.

[2] Champion Gold Medal given by the National Pony Society for the best Mare or Filly in Classes 44, 45, 47 and 48.

[3] Bronze Medal given by the National Pony Society for the best Foal in Class 48, entered or eligible for entry in the Supplement to the National Pony Stud Book.

[Unless otherwise stated each prize animal named below was "bred by exhibitor."]

Hackneys.[1]

Class 53.—*Hackney Stallions, foaled in* 1917. [2 entries.]

291 I. (£10, & R. N. for Champion.[2]) — H. HINRICHSEN, Grotto House, Over Peover, Knutsford, Cheshire, for **Bertrano** 13288, chestnut; *s.* King's Proctor 11102, *d.* Ophelia's Daughter Grace 18479 *by* Royal Danegelt 5785.

292 II. (£5.)—WILLIAM HENRY JOHN, Pen-y-Park, Lower Machen, Newport, Mon., for **Pen-y-Park Danegelt** 13310, chestnut; *s.* Rumney Viscount 11553, *d.* Pen-y-Lan Lady 16851 *by* Royal Danegelt 5785.

Class 54.—*Hackney Stallions, foaled in or before* 1916, *over* 14 *and not exceeding* 15·2 *hands.* [3 entries.]

294 I. (£10.)—SIR LEES KNOWLES, BT., C.V.O., Westwood, Pendlebury, Manchester, for **Salford Victor** 12918, chestnut, foaled in 1914; *s.* Hopwood Viceroy 9280, *d.* Knowle Hulma 13633 *by* His Majesty 2513.

295 II. (£5.)—CAPT. BERTRAM W. MILLS, Redhill Farm, Edgware, Middlesex, for **Danum Ballyowen** 12829, dark chestnut, foaled in 1914, bred by Ernest Bewley, Danum, Rathgar: *s.* Polonius 4931, *d.* Sprightly Clara 21041 *by* Royal Danegelt 5785.

293 III. (£3.)—JOHN WILLIAM HOLLAND, Punt-y-Gwair, Llanengan, Carnarvonshire, for **Moordale Masterpiece** 13235, chestnut, foaled in 1916, bred by E. Hollingworth, Moordale, Dobcross; *s.* Moordale Toreador 11522, *d.* Mistress Nancy 21554 *by* Polonius 4931.

Class 55.—*Hackney Stallions, foaled in or before* 1916, *over* 15·2 *hands.* [5 entries.]

297A I. (£10, & Champion.[2])—C. F. KENYON, Steele, Whitchurch, Salop, for **Kirkburn Leader** 12875, dark chestnut, foaled in 1912, bred by F. W. Buttle, Kirkburn Manor, Driffield; *s.* Mathias 6473, *d.* Kirkburn Princess 22089 *by* Kirkburn Toreador 8534.

299 II. (£5.)—CAPT. BERTRAM W. MILLS, Redhill Farm, Edgware, Middlesex, for **Hopwood King** 11804, chestnut, foaled in 1910, bred by Sir Lees Knowles, Bt., Pendlebury: *s.* Admiral Crichton 9578, *d.* Ryburn Lucinda 17696 *by* Ganymede 2076.

297 III. (£3.)—HENRY B BRANDT, Capenor, Nutfield, Surrey, for **Capenor Addenda**, chestnut, foaled in 1915: *s.* Admiral Crichton 9578, *d.* Ryburn Lucinda 17696 *by* Ganymede 2076.

296 R. N.—FRANK APPLEYARD, Hells Farm, Chinley, for **Notts Forest Sirdar.**

Class 56.—*Hackney Fillies or Geldings, foaled in* 1917. [1 entry.]

[No Award.]

Class 57.—*Hackney Fillies or Geldings, foaled in* 1916. [1 entry.]

301 I. (£10, & Champion.[3])—MRS. WALTER BRIGGS, Linden Hall, Borwick, Carnforth, Lancs., for **Danum Queen** 24478, chestnut filly, foaled in 1916, bred by Ernest Bewley, Danum, Rathgar: *s.* Adbolton Kingmaker 12274, *d.* Ambitious Becky 21845 *by* Beckingham Squire 8070.

Class 58.—*Hackney Mares, with Foals at foot.* [3 entries.]

303 I. (£10, & R.N. for Champion.[3])—WHITTAKER & OLIVER, Park Hill, Disley, Cheshire, for **Warwick Olivia** 22281, chestnut, foaled in 1910, bred by John Conchar, Wylde Green, Birmingham: *s.* Polonius 4931, *d.* Ewell Belinda 16602 *by* Goldfinder 6th 1791. [Foal *by* Angram Majesty 11967.]

Class 59.—*Hackney Foals, the produce of Mares in Class* 58. [2 entries.]

305 I. (£5.)—WHITTAKER & OLIVER, Park Hill, Disley, Cheshire, for chestnut filly, foaled May 1; *s.* Angram Majesty 11967, *d.* Warwick Olivia 22281 *by* Polonius 4931.

Hackney Ponies.[1]

Class 60.—*Hackney Pony Stallions, foaled in* 1916 (*not exceeding* 13·3 *hands*), *or* 1917 (*not exceeding* 13·2 *hands*). [5 entries.]

306 I. (£10, & Champion.[4])—JOSHUA BALL, Southworth Hall, Warrington, for **Johnty Southworth**, bay, foaled in 1916, bred by Miss Lort, Castlemai, Carnarvon; *s.* Southworth Swell 11219, *d.* Cassie Brown 1982 *by* Cassius 2397.

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[1] £80 towards the Prizes for Hackneys and Hackney Ponies were given by the Hackney Horse Society.

[2] Champion Gold Medal, given by the Hackney Horse Society, for the best Stallion in Classes 53-55.

[3] Champion Gold Medal, given by the Hackney Horse Society, for the best Mare or Filly in Classes 56-58.

[4] Champion Gold Medal given by the Hackney Horse Society for the best Stallion in Classes 60 and 61.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

308 **II.** (£5.)—MRS. A. C. KING, Braishfield Manor, Romsey, for **Braishfield Furore** 1358 bay, foaled in 1916; *s.* Fusee 12626, *d.* Tissington Convert 21086 *by* Tissington Gideon 9042.

307 **III.** (£3.)—W. W. BOURNE, Garston Manor, Watford, Herts, for **Raffles**, bay, foaled in 1917, bred by Mrs. A. C. King, Braishfield, Romsey; *s.* Harviestoun Wattie 11463, *d.* Talke Fire Girl 22250 *by* Talke Fire King 9932.

309 **R. N.**—D. R. THOMAS, Tanyrallt Pony Stud, Talybont, R.S.O., Cardiganshire, for **Tanyrallt Kitchener.**

Class 61.—*Hackney Pony Stallions, foaled in or before* 1915, *not exceeding* 14 *hands.* [4 entries.]

314 **I.** (£10, & **R.N. for Champion.**[1])—D. R. THOMAS, Tanyrallt Pony Stud, Talybont, R.S.O., Cardiganshire, for **Tanyrallt Fireboy** 11229, bay, foaled in 1908, bred by O. T. Price, Lyndhurst; *s.* Fireboy 7430, *d.* Lyndhurst Paula 16780 *by* Tissington Horace 7653.

313 **II.** (£5. —F. W. RUDDER, Dorridge, Birmingham, for **Little Gideon** 13227, dark bay, foaled in 1911, bred by W. B. Lloyd, Tynyfrith, North Wales; *s.* Little Fireboy 10735, *d.* Tissington Abigail 24603 *by* Tissington Gideon 9042.

Class 62.—*Hackney Pony Fillies or Geldings, foaled in* 1916 (*not exceeding* 13·3 *hands*), *or* 1917 (*not exceeding* 13·2 *hands*). [8 entries.]

317A **I.** (£10.)—C. F. KENYON, Steele, Whitchurch, Salop, for **Axholme Venus** 24435, bay, foaled in 1916 bred by Hy. Gilding, Gateacre, Liverpool; *s.* Southworth Swell 11219, *d.* Talke Princess 21695 *by* Talke Fire King 9932.

319 **II.** (£5.)—MRS. A. C. KING, Braishfield Manor, Romsey, for **Braishfield Miss Rocket,** black dun filly, foaled in 1917; *s.* Rip 12724, *d.* Little Lightheart 19304 *by* Little Ruby 9311.

315 **III.** (£3.)—JOSHUA BALL, Southworth Hall, Warrington, for **Diana Southworth,** brown filly, foaled in 1917; *s.* Southworth Swell 11219, *d.* Southworth Merriment 21674 *by* Southworth Tissington 9898.

321 **R. N.**—MRS. VAN NIEVELT VAN HATTUM, Holland Stud, Moore Place, Betchworth, Surrey, for **Girda.**

H. C.—320.

Class 63.—*Hackney Pony Mares, with Foals at foot, not exceeding* 14 *hands.* [4 entries.]

322 **I.** (£10, & **Champion** [2])—W. W. BOURNE, Garston Manor, Watford, Herts, for **Tissington Bauble** 20296 dark bay, foaled in 1907, bred by Sir Gilbert Greenall, Bart., C.V.O., Walton Hall, Warrington; *s.* Berkeley Claudius 8372, *d.* Tissington Evalina 17001 *by* Warrener 8025. [Foal *by* Fusee 12626.]

322A **II.** (£5, & **R.N. for Champion.**[2])—C. F. KENYON, Steele, Whitchurch, Salop, for **Rusper Maryan** 22789, brown, foaled in 1910; *s.* Tissington Gideon 9042, *d.* Parbold Lady Mary 1300 *by* Cassius 2397. [Foal *by* Melbourne Shot 13055.]

323 **III.** (£3.)—MRS. A. C. KING, Braishfield Manor, Romsey, for **Braishfield Calypso** 23874, bay, foaled in 1914; *s.* Tissington Gideon 90042, *d.* Tissington Calypso *by* Sir Horace. [Foal *by* Fusee 12626.]

324 **R. N.**—D. R. THOMAS, Tanyrallt Pony Stud, Talybont, for **Tanyrallt Mighty Atom.**

Welsh.[3]

Class 64.—*Welsh Cob Colts, foaled in* 1917 *or* 1918. [2 entries.]

326 **I.** (£10).—RICHARD JEREMIAH, Woodfield House, Blackwood, Mon., for **Woodfield Surprise** 964, chestnut, foaled in 1917; *s.* Woodcock 2nd, *d.* Lily of the Valley *by* Evolve.

325 **II.** (£5.)—JAMES HAYES, The Cottage, Llantwit Vardre, Cardiff, for **Vindictive,** chestnut, foaled in 1917; *s.* Royal Oak, *d.* Gyp *by* Cardigan Comet.

Class 65.—*Welsh Cob Stallions, foaled in* 1914 (*not exceeding* 15 *hands*), *or* 1915 (*not exceeding* 14·2 *hands*), *or* 1916 (*not exceeding* 14 *hands*). [2 entries.]

328 **I.** (£10.)—CHARLES COLTMAN ROGERS, Stanage Park, Brampton Bryan, Herefordshire, for **Stanage Skipjack** 916, chestnut, foaled in 1915; *s.* Trotting Jack 528, *d.* Stanage Retroussée 3671 *by* Hurricane 2nd.

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[1] Champion Gold Medal, given by the Hackney Horse Society, for the best Stallion in Classes 60 and 61.

[2] Champion Gold Medal, given by the Hackney Horse Society, for the best Mare or Filly in Classes 62 and 63

[3] £184 towards these Prizes and Silver Medals to the First Prize Winners, except in Classes 64, 67, 73 and 75, were given by the Welsh Pony and Cob Society. Also Certificates in all Classes to the Exhibitor and Breeder of the First Prize Winners, the Animals to be entered or accepted for entry in the Welsh Pony Stud Book.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

327 II. (£5.)—ALEXANDER KENNEDY, 15 Newbridge Road, Llantrisant, Glamorganshire, for **Royal Oak Express**, dark bay, foaled in 1914, bred by Evan M. Thomas, Llwyncrwn Isaf, Llantrisant; *s.* Young Oak Express 781, *d.* Lucy *by* Tyrant Express.

Class 66.—*Welsh Cob Stallions, foaled in or before* 1913, *over* 14 *hands.* [6 entries.]

333 I. (£10.)—DAVID REES, Blainwaur Welsh Stud, Penuwch, Llanio Road, Cardiganshire, for **High Stepping Gambler 2nd** 143, dark bay, foaled in 1902, bred by Evan Davies, Penrhiw Silian, Lampeter; *s.* High Stepping Gambler 1st 33, *d.* Fanny *by* Young King Jack.

330 II. (£5.)—THOMAS JONES, Troedrhiwrhwch, Llandyssul, South Wales, for **Llwynog-y-Dyffryn** 882, chestnut, foaled in 1912; *s.* Briton Flyer 622, *d.* Flower 525 *by* Gomer.

329 III. (£3.)—FRED BUTLER, 119 Hatfield Road, St. Albans, for **Mathrafal Brenin** 873, chestnut, foaled in 1911, bred by W. Watkins, Glantydam Beaufort, South Wales; *s.* Trotting Railway 2nd 529, *d.* Dolly 5648 *by* Evolve.

334 R. N.—MOSES WILLIAMS, Abernant Stud Farm, Ammanford, Carmarthenshire, for **Abernant Express.**

H. C.—332.

Class 67.—*Welsh Cob Fillies, foaled in* 1916 *or* 1917. [2 entries.]

335 I. (£10.)—DAVID DAVIES, Blaenpistyll Stud, Cardigan, for **Pistyll Red Star**, bay, foaled in 1916, bred by Tom Lloyd, St. Mary's, Cardigan; *s.* Pistyll Cob 628, *d.* Kifeth Pwss *by* Comet Bach 533.

Class 68.—*Welsh Cob Mares, foaled in or before* 1915, *with Foals at foot, over* 14 *hands.* [1 entry.]

337 I. (£10.)—THOMAS MORGAN & SON, 39 Station Road, Llanelly, Carmarthenshire, for **Crotin Ddu** 3023, black, foaled in 1904, bred by D. Thomas, Pentre Davis, Llanarthney, Carmarthenshire; *s.* Heart of Welsh Flyer, *d.* Bess *by* Welsh Flyer. [Foal *by* Duffryn Relish.]

Class 69.—*Welsh Pony Stallions, foaled in or before* 1915, *over* 12·2 *and not exceeding* 14 *hands.* [4 entries.]

341 I. (£10.)—DAVID THOMAS, Frondeg, Pennwch, Llanio Road, Cardiganshire, for **Pennwch Cymro Bach** 874, chestnut, foaled in 1913; *s.* Trotting Jack 528, *d.* Bess *by* Welsh Jack 2nd.

Class 70.—*Welsh Pony Mares, foaled in or before* 1915, *with Foals at foot, over* 12·2 *and not exceeding* 14 *hands.*

[No entry.]

Class 71.—*Welsh Pony Stallions, foaled in or before* 1915, *over* 12 *and not exceeding* 12·2 *hands.* [3 entries.]

344 I. (£10.)—CHARLES COLTMAN ROGERS, Stanage Park, Brampton Bryan, Herefordshire, for **Stanage Daylight** 248, grey, foaled in 1905, bred by D. Price, Queen's Square, Llangadock; *s.* Dyoll Starlight 4, *d.* Star 1st *by* Merlyn Myddfai.

343 II. (£5.)—W. S. MILLER, Forest Lodge, Brecon, South Wales, for **Forest Hopeful** 816, chestnut, foaled in 1913; *s.* Forest Mountain Model 390, *d.* Eamlyn Midget 1222 *by* Eiddwm Flyer 2nd 10.

Class 72.—*Welsh Pony Mares, foaled in or before* 1915, *with Foals at foot, over* 12 *and not exceeding* 12·2 *hands.*

[No entry.]

Class 73.—*Welsh Mountain Pony Colts, foaled in* 1916, *not exceeding* 12 *hands, or in* 1917, *not exceeding* 11·2 *hands.* [7 entries.]

346 I. (£10.)—T. B. LEWIS, Bronallt, Llanwrtyd Wells, for **Irfon Talisman** 896, red roan, foaled in 1916; *s.* Dyoll Starlight 4, *d.* Seren Eppynt 4525.

350 II. (£5.)—CHARLES COLTMAN ROGERS, Stanage Park, Brampton Bryan, Herefordshire, for **Stanage Perfect Day**, grey, foaled in 1916; *s.* Daylight 248, *d.* Stanage Aldernut 4027 *by* Hwntw 2nd.

351 III. (£3.)—CHARLES COLTMAN ROGERS, for **Stanage Sunrise**, grey, foaled in 1916; *s.* Shooting Star 73, *d.* Stanage Satellite 2556 *by* Dyoll Starlight 4.

348 R. N.—FREDERICK FFITCH MASON, The Faraam, Killay, Glamorgan, for **Fairwood Tomtit.**

H. C.—349.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 74.—*Welsh Mountain Pony Stallions, foaled in or before* 1915, *not exceeding* 12 *hands.* [7 entries.]

358 I. (£10, & S. P.[1])—HUGH THOMAS, Cwm Mill Hotel, Ferryside, for **Towy Model Starlight** 748, grey, foaled in 1910, bred by late J. Lloyd Morgan, Rhiwfelen, Abergwili; *s.* Dyoll Starlight 4, *d.* Lady Greylight 2046 *by* Greylight 80.

357 II. (£5, & R. N. for S. P.[1])—THOMAS JONES POWELL, Cefn Penarth, Penybont Station, Radnorshire, for **Penarth Combination** 884, grey, foaled in 1914, bred by late E. M. Jones, Cefn Penarth, Penybont Station; *s.* Dyoll Starlight 4, *d.* Penarth Flower Girl 2212 *by* Shooting Star 73.

359 III. (£3.)—OWEN WILLIAMS, Crossways, Cowbridge, Glamorgan, for **Shon-o'-Lleyn**, strawberry roan, foaled in 1914, bred by Miss Eurgain Lort, Castlemai, Carnarvon; *s.* Revolt 493 *d.* Gipsy 97 *by* Gell Hero.

356 R. N. FREDERICK FFITCH MASON, The Faraam, Killay, Glamorgan, for **Fairwood Storm King.**
H.C.—354.

Class 75.—*Welsh Mountain Pony Fillies, foaled in* 1916, *not exceeding* 12 *hands, or in* 1917, *not exceeding* 11·2 *hands.* [6 entries.]

365 I. (£10.)—THE DUCHESS OF NEWCASTLE, Clumber, Worksop, Notts, for **Clumber Miss Mary**, black, foaled in 1917; *s.* Hardwick Conqueror 668, *d.* Clumber Janet 3rd 3758 *by* Hardwick Sensation 670.

360 II. (£5.)—MRS. PHILIP HUNLOKE, Wingerworth Hall, Chesterfield Derbyshire, for **Grove Dora**, grey, foaled in 1916, bred by Mrs. Green, Grove, Craven Arms; *s.* Champion Shooting Star 73, *d.* Grove Dolly 1486 *by* Dick Hill 49.

364 III. (£3, & R. N. for S. P.[2])—FREDERICK FFITCH MASON, The Faraam, Killay, Glamorgan, for **Fairwood Flare**, bay, foaled in 1917; *s.* Sparklight 471, *d.* Faraam Silverlight 3802 *by* Dyoll Starlight 4.

363 R. N.—T. B. LEWIS, Bronallt, Llanwrtyd Wells, for **Irfon Marvel.**
H. C.—361.

Class 76.—*Welsh Mountain Pony Mares, foaled in or before* 1915, *with Foals at foot, not exceeding* 12 *hands.* [6 entries.]

369 I. (£10.)—THE DUCHESS OF NEWCASTLE, Clumber, Worksop, Notts, for **Clumber Janet 3rd** 3758, grey, foaled in 19[illegible]8; *s.* Hardwick Sensation 670, *d.* Clumber Janet 2nd *by* Hardwick Briton. [Foal *by* Grove Elgin 729.]

366 II. (£5, & S. P.[2])—MISS N. GWYNNE HOLFORD, Buckland, Bwlch, R.S.O., Breconshire, for **Starlight**, bay, bred by W. S. Miller, Forest Lodge, Brecon. [Foal *by* Merthyr Forest Fire.]

370 III. (£3.)—GWILYN REES, The Pines, Gowerton, Glam., for **Rhosyd Beauty** 3402, chestnut, foaled in 1909, bred by William Williams, Garth, Breconshire; *s.* A Son of Dick Hill. [Foal *by* Cymro Express.]

371 R. N.—H. WHITLEY, Primley, Paignton, for **Weston Lightning.**

Shetland Ponies.

Class 77.—*Shetland Pony Stallions, foaled in or before* 1916, *not exceeding* 10·2 *hands.* [5 entries.]

375 I. (£10, & R. N. for Champion.[3])—MRS. ETTA DUFFUS, Penniwells, Elstree, Herts., for **Huzzon of Penniwells**, black, foaled in 1914, bred by C. A. Rihder, Kirkcudbright; *s.* Haldon 270, *d.* Barbara of Penniwells 2919 *by* Nant Ius 511.

372 II. (£5.)—MRS. G. J. AUSTIN, Ellem Mide, Totteridge, Herts, for **Vainglory** 842, chestnut, foaled in 1912, bred by Lady Estella Hope, South Park, Bodiam, Sussex; *s.* Thoreau 392, *d.* Vaila 1666 *by* Prince of Thule 36.

374 III. (£3.)—MRS. GORDON COLMAN, Great Burgh, Epsom Downs, for **Ben Lawers of Earlshall** 440, black, foaled in 1905, bred by R. W. R. Mackenzie, Earlshall, Leuchars; *s.* Multum in Parvo 28, *d.* Benorie 1519 *by* Odin 32.

Class 78.—*Shetland Pony Mares, with Foals at foot, not exceeding* 10·2 *hands.* [2 entries.]

377 I. (£10 & Champion.[3])—MRS. ETTA DUFFUS, Penniwells, Elstree, Herts, for **May Queen of Penniwells** 3348, black, foaled in 1[illegible]11; *s.* Dante of Colville 444, *d.* Mayfly of Penniwells 2582 *by* Glencairn 314. [Foal *by* Vagary of Penniwells 841.]

378 II. (£5.)—MRS. ETTA DUFFUS, for **May Dew of Penniwells** 3347, black, foaled in 1912; *s.* Dragon of Earlshall 595, *d.* Mayfly of Penniwells 2582 *by* Glencairn 314. [Foal *by* Vagary of Penniwells 841.]

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[1] Special District Prize given by a Member of the R.A.S.E., for the best Mountain Pony Colt or Stallion in Classes 73 and 74, the property of an Exhibitor residing in Wales or Monmouthshire.

[2] Special District Prize given by a Member of the R.A.S.E., for the best Mare or Filly in Classes 75 and 76, the property of an Exhibitor residing in Wales or Monmouthshire.

[3] Champion Silver Medal given by the Shetland Pony Stud Book Society for the best Shetland Pony in Classes 77 and 78.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Hunter Riding Classes.[1]

Class 79.—*Hunter Mares or Geldings, foaled in* 1915. [11 entries.]

386 I. (£15.)—T. E. PULLEYN, Appleton-le-Moors, Sinnington, Yorks, for **Ace of Trumps**, chestnut gelding, bred by D. Coates, Pickering, Yorks; *s.* Fealsham.

383 II. (£10.)—JOHN HOMES, Linslade, Leighton Buzzard, for **Silver Peace**, chestnut gelding, bred by W. Nickalls, Bythorn, Thrapston; *s.* General Peace, *d.* Silver Jar *by* Jeddah.

385 III. (£5.)—J. NORBURY, Heathside, Knutsford, Cheshire, for **Patricia 4th** 5278, chestnut mare; *s.* Sly Patrick, *d.* Wishful *by* Mountain Buck.

384 R. N.—MCMORRAN BROTHERS, Aston Cottage, Nantwich, Cheshire, for **Manners**.

Class 80.—*Hunter Mares or Geldings, foaled in or before* 1915. *Open only to Exhibitors resident in South Wales or Monmouthshire.* [13 entries.]

395 I. (£15.)—J. HUGH HOWELL, Fairwater, Cardiff, for **Pembroke Rhyfeddod**, bay gelding, aged.

399 II. (£10.)—C. W. REES STOKES, Warwick House, Tenby, for **Lucky Day**, chestnut gelding, foaled in 1913, bred by John Williams, Eithenduanissa, Mydrims, Carmarthenshire; *s.* Lousby, *d.* Miss Buckley *by* Warinsgate.

401 III. (£5.)—LORD TREDEGAR, Tredegar Park, Newport, Mon., for **Shot Hard**, bay gelding, foaled in 1914, bred by E. W. Robinson, Liscombe, Leighton Buzzard; *s.* The Tower, *d.* Partridge *by* Young Maiden.

393 R. N.—WILLIAM HENRY GEORGE, Upper House, Wolfsdale, Camrose, S.O., Pembrokeshire, for **Carbine**.

Class 81.—*Hunter Mares or Geldings, foaled in or before* 1915, *up to from* 12 *to* 13·7 *stone.* [20 entries.]

403 I. (£20.)—JOHN DRAGE, Chapel Brampton, Northampton, for **Scamp**, bay gelding, foaled in 1912.

414 II. (£15.)—J. KENNETH STEVENSON, Old Bell Hotel, Barnby Moor, Retford, Notts., for **Fieldmist**, chestnut gelding, foaled in 1913.

411 III. (£10.)—MAJOR H. FAUDEL PHILLIPS, Orkney Cottage, Taplow, Bucks., for **Kissing Time**, gelding, foaled in 1914.

406 R. N.—MCMORRAN BROTHERS, Aston Cottage, Nantwich, Cheshire, for **Lord Nelson**.
H. C.—409.

Class 82.—*Hunter Mares or Geldings, foaled in or before* 1915, *up to more than* 13·7 *and not more than* 15 *stone.* [28 entries.]

424 I. (£20, & Champion.[2])—JOHN DRAGE, Chapel Brampton, Northampton, for **Satan**, chestnut gelding, foaled in 1913.

433 II. (£15.)—MRS. J. PUTNAM, Haydon Hill House, Aylesbury, for **Haydon's Delight**, bay gelding, foaled in 1911.

435 III. (£10.)—J. H. STOKES & SON, Nether House, Great Bowden, Market Harborough, for **Adieu**, chestnut gelding, foaled in 1913.

385 IV. (£5.)—J. NORBURY, for **Patricia 4th**. (See Class 79.)

430 V. (£3.)—MAJOR H. FAUDEL PHILLIPS, Orkney Cottage, Taplow, Bucks., for **Short Shift**, chestnut gelding, foaled in 1913, bred by J. Irvine Boswell, Crawley Grange, Newport Pagnell, Bucks.; *s.* Barabas 2nd, *d.* Royal Bess *by* Royal Sovereign.

437 R. N.—HENRY WATSON, Felton Park, Felton, Northumberland, for **Amber**.
H. C.—422, 428, 436.

Class 83.—*Hunter Mares or Geldings, foaled in or before* 1915, *up to more than* 15 *stone.* [18 entries.]

447 I. (£20, & R.N. for Champion.[2])—MRS. J. PUTNAM, Haydon Hill House, Aylesbury, for **Farringdon**, dark brown gelding, foaled in 1912.

442 II. (£15.)—GEOFF. KENYON, Plainville, Haxby, York, for **Gold Flake**, chestnut gelding, foaled in 1914.

440 III. (£10).—JOHN DRAGE, Chapel Brampton, Northampton, for **Samson**, chestnut gelding, foaled in 1913.

446 IV. (£5.)—MAJOR H. FAUDEL PHILLIPS, Orkney Cottage, Taplow Bucks., for **Mr. Greatheart**, bay gelding, foaled in 1913.

451 V. (£3.)—BRIG.-GEN. C. R. P. WINSER, C.M.G., D.S.O., Dean House, Charlbury, Oxon., for **Slieve Na Mann**, bay gelding, foaled in 1911.

449 R. N.—J. H. STOKES & SON, Nether House, Great Bowden, Market Harborough, for **Observation**.

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[1] Prizes given by the Cardiff Local Committee.

[2] Gold Challenge Cup value Fifty Guineas given by gentlemen interested in Hunters, for the best Mare or Gelding in Classes 79-83.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Hacks and Riding Ponies.[1]

(*To be ridden.*)

Class 84.—*Mares or Geldings, foaled in or before* 1915, *not exceeding* 12·2 *hands. To be ridden by children born in or after* 1907. [7 entries.]

452 **I.** (£10.)—H. W. CADBURY-BROWN, Rotchfords, Wormingford, Essex, for **Happ Day**, bay mare, foaled in 1912.

456 **II.** (£5.)—MRS. PHILIP HUNLOKE, Wingerworth Hall, Chesterfield, Derbyshire, for **Zenna**, chestnut mare, foaled in 1913, bred by Miss Calmady Hamlyn, Bidlake Vean, Bridestowe; *s.* Dewarka.

457 **III.** (£3.)—JONES BROTHERS, 6, Pant Road, Dowlais, Glam., for **Morlais Twilight** 4922, grey mare, foaled in 1910, bred by T. S. Clarke, Tynewydd, Llangunnor, Carmarthen; *s.* Dyoll Starlight 4, *d.* Gwenlight 3018.

453 **R. N.**—SIR JAMES CORY, BT., Coryton, Whitchurch, Cardiff, for **Fairy.**

Class 85.—*Mares or Geldings, foaled in or before* 1915, *over* 12·2 *and not exceeding* 14 *hands. To be ridden by children born in or after* 1905. [8 entries.]

460 **I.** (£10.)—MRS. PHILIP HUNLOKE, Wingerworth Hall, Chesterfield, Derbyshire, for **Rumpelstiltskin**, brown gelding, foaled in 1911, bred by Mrs. Calmady Hamlyn, Bidlake Vean, Bridestowe; *s.* Cruickshanks.

464 **II.** (£5.)—MRS. J. PUTNAM, Haydon Hill House, Aylesbury, for **Beauty**, piebald gelding, foaled in 1914.

462 **III.** (£3.)—RALPH CORY MOREL, St. Andrews House, Dinas Powis, Glam., for **Princess**, bay mare, foaled in 1910.

465 **R. N.**—G. C. ROONEY, St. Andrews, Dinas Powis, Glam., for **Dandy.**

Class 86.—*Mares or Geldings, foaled in or before* 1915, *over* 14 *and not exceeding* 15 *hands.* [9 entries.]

471 **I.** (£10, & R. N. for Champion.[2])—EVAN JONES, Manoravon, Llandilo, for **Romani**, bay gelding, foaled in 1912; *s.* Sandiway 121, *d.* Ameen.

468 **II.** (£5.)—W. E. ARTHUR, Burgotha Farm, Grampound Road, Cornwall, for **Burgotha Pride**, chestnut gelding, foaled in 1911, bred by John Arthur, Bodmin, Cornwall; *s.* Amusement, *d.* Daisy.

474 **III.** (£3.)—CAPT. R. M. STEWART RICHARDSON, 11th Hussars, Cavalry Barracks, Aldershot, for **Twilight**, grey gelding, foaled in 1913.

475 **R. N.**—MASTER VIVIAN HUGGETT, Kensington Place, Newport, Mon., for **Sunbeam.**
H. C.—467.

Class 87.—*Mares or Geldings, foaled in or before* 1915, *over* 15 *hands.* [10 entries.]

477 **I.** (£10, & Champion.[2])—MAJOR H. FAUDEL PHILLIPS, Orkney Cottage, Taplow, Bucks, for **As You Were**, chestnut gelding.

383 **II.** (£5.)—JOHN HOMES, for **Silver Peace.** (See Class 79.)

478 **III.** (£3.)—MAJOR H. FAUDEL PHILLIPS, for **The Chocolate Soldier**, chestnut gelding, foaled in 1906, bred by the late Sir John Barker, Bishop's Stortford; *s.* Jew Boy, *d.* Lightning.

382 **R. N.**—LORD GLANELY, The Court, St. Fagans, Glam., for **Suffolk Guide.**
H. C.—421.

Driving Classes.[1]

Class 88.—*Harness Mares or Geldings, not exceeding* 14 *hands.* [12 entries.]

482 **I.** (£10.)—W. W. BOURNE, Garston Manor, Watford, Herts., for **Bricket Fame**, bay gelding, foaled in 1909, bred by the late W. Cliff, Melbourne Hall, York; *s.* Royal Success, *d.* Wortley Belle 14873 *by* Sir Horace 5402.

483 **II.** (£5.)—W. W. BOURNE, for **Bricket Fire**, dark bay gelding, bred by the late W. Cliff; *s.* Royal Success, *d.* Wortley Belle 14873 *by* Sir Horace 5402.

485A **III.** (£5.)—C. F. KENYON, Steele, Whitchurch, Salop, for **Buckley Searchlight** 13164, brown gelding, foaled in 1914, bred by W. O. S. Smethurst, Walshaw, Bury, Lancs.; *s.* Torchfire 9472, *d.* Walshaw Sunlight 24608 *by* Ganymede 2076.

484 **IV.** (£3.)—THOMAS EVANS, St. James Gardens, Swansea, for **Shirley Venus** 23345, bay mare, foaled in 1911, bred by the late Thomas Smith, Hall Green, Birmingham; *s.* Sir Horace 5402, *d.* Tissington Venus 14822 *by* Golden Rule 6380.

459 **V.** (£3.)—DAVID HARRIES, Dyffryn Stores, Tirydail, Ammanford, Carmarthenshire, for **Sunshine**, roan mare, foaled in 1913, bred by T. Rees, Glanworth Farm, Tally Road, Llandilo; *s.* Gordon Sensation, *d. by* Trustfull.

481 **R. N.**—ALBERT BEECHER, 72 Eldon Street, Cardiff, for **Fire Queen.**

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[1] Prizes given by the Cardiff Local Committee.

[2] Gold Challenge Cup, value Fifty Guineas, given by gentlemen interested in Hacks and Riding Ponies for the best Animal in Classes 84—87.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 89.—*Harness Mares or Geldings, over* 14 *and not exceeding* 15 *hands.* [9 entries.]

492 I. (£10, R. N. for Champion[1] & R. N. for G.M.[2])—WILLIAM S. MILLER, Balmanno Castle Bridge of Earn, Perthshire, for **Park Carnation** 22717, dark brown mare, foaled in 1908, bred by W. Bellamy, Park House, Wimblington, Cambs.; *s.* Luath 9328, *d.* Park Sunshine 22733 *by* Lord Dundreary 7907.

495 II. (£5.)—MRS. JAMES PUTNAM, Haydon Hill House, Aylesbury, for **Haydon's Blighty**, bay gelding, foaled in 1914, bred by Robert Whitworth, Willtoft Hall, Howden, Yorks.; *s.* Polonius 4931, *d.* Melbourne Belle 19338 *by* Successful 8314.

493 III. (£5.)—CAPT. BERTRAM W. MILLS, Redhill Farm, Edgware, Middlesex, for **Black Miracle** 23953, black mare, foaled in 1914, bred by Enoch Glen, Bathgate, N.B.; *s.* Mathias 6473, *d.* Inverness Duchess of Connaught 15192 *by* Garton Duke of Connaught 3009.

491 IV. (£3.)—H. K. MCCAUSLAND, Charnwood Stud Farm, Tunbridge Wells, for **Garston Madge** 23946, brown roan mare, foaled in 1914, bred by G. A. Cobb, Woodside, Garston, nr. Watford; *s.* Leopard 9783, *d.* Brompton Princess [illegible] *by* Garton Duke of Connaught 3009.

496 V. (£3.)—CHARLES RADCLIFFE, 19 Newport Road, Cardiff, for **Peterston Princess** 20938, chestnut mare; *s.* Polonius 4931, *d.* Princess Royal *by* His Majesty.

494 R. N.—THOMAS NICHOLAS, Victoria Buildings, Port Talbot, for **Handley Page**.

Class 90.—*Harness Mares or Geldings, over* 15 *and not exceeding* 15·2 *hands.* [8 entries.]

501 I. (£10, & Champion[1] & G.M.[2])—CAPT. BERTRAM W. MILLS, Redhill Farm, Edgware, Middlesex, for **Black Capenor** 12591, black gelding, foaled in 1913, bred by H. B. Brandt, Capenor, Nutfield; *s.* Mathias A1 10751, *d.* Madame Pompadour 20070, *by* Polonius 4931.

500 II. (£5.)—WILLIAM S. MILLER, Balmanno Castle, Bridge of Earn, Perthshire, for **Field Marshall**, dark brown gelding, foaled in 1913.

502 III. (£5.)—MRS. JAMES PUTNAM, Haydon Hill House, Aylesbury, for **Footprint**, black gelding, foaled in 1911, bred by Robert Chapman, Glenlwig, N.B.; *s.* Mathias 6473 *d. by* The Conqueror 5559.

500A IV. (£3.)—C. F. KENYON, Steele, Whitchurch, Salop, for **Shirley Apollo** 13906, chestnut gelding, foaled in 1915, bred by the late Thomas Smith, Hall Green, Birmingham; *s.* Admiral Crichton 9578, *d.* Apollinaris 6858 *by* Polonius 4931.

503 V. (£3.)—PHILIP SMITH, Haddon House, Ashton-on-Mersey, Cheshire, for **Northern Glory** 20134, brown mare, foaled in 1907, bred by Alex. Morton, Gowanbank, Darvel, N.B.; *s.* Mathias 6473, *d.* Bog Myrtle 11648 *by* Garton Duke of Connaught 3009.

479 R. N.—GRIFFITH PHILLIPS, Bronhenloy House, Ferndale, for **Mathias Reality**.

Class 91.—*Harness Mares or Geldings, over* 15 2 *hands.* [9 entries.]

512 I. (£10.)—MRS. B. TILBURY, Whitchurch House, Preston Road, Brighton, for **Gaythorn**, chestnut gelding, foaled in 19 5, bred by James Prentice, Carolside, Uddingston; *s.* Mathias 6473, *d.* Sweet Lips 15461 *by* North Star 1317.

511 II. (£5.)—PHILIP SMITH, Haddon House, Ashton-on-Mersey, Cheshire, for **Adbolton Black Prince** 11314, black gelding, foaled in 1909, bred by A. W. Hickling, Adbolton, Nottingham; *s.* Mathias 6473, *d.* Princess Clare 12227 *by* Garton Duke of Connaught 3009.

509 III. (£5.)—CAPT. BERTRAM W. MILLS, Redhill Farm, Edgware, Middlesex, for **Black Vogue**, black gelding, foaled in 1912, bred by James Prentice, Carolside, Uddington, N.B.; *s.* Mathias 6473, *d.* Inverness Duchess of Connaught 15192 *by* Garton Duke of Connaught 009.

506 IV. (£3.)—MRS. FREDERICK E. COLMAN, Nork Park, Epsom Downs, for **Crystal of Nork** 23510, brown mare; *s.* Mathias 6473, *d.* Alla Breve 18863 *by* All Serene 8346.

Class 92.—*Pairs of Harness Mares or Geldings, to be driven in double harness.* [4 entries.]

509 & 510 I. (£10, & Champion.[3])—CAPT. BERTRAM W. MILLS, Redhill Farm, Edgware, Middlesex, for **Black Vogue** (see Class 91); and **Grand Viscount**, black gelding.

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[1] Gold Challenge Cup, value Fifty Guineas, given for the best Animal in Classes 88-91

[2] Gold Medal, given by the Hackney Horse Society for the best Mare or Gelding in Classes 88-91, the produce of a registered Hackney Stallion.

[3] Gold Challenge Cup, value Fifty Guineas, given by two members of the R.A.S.E., for the best Pair in Class 92.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 93.—*Pairs of Harness Mares or Geldings, to be driven tandem.* [4 entries.]

504 & 505 I. (£10, & Champion.[1])—MISS BROCKLEBANK, Wing Grange, Oakham, for **Illumination**, bay gelding, foaled in 1906 bred by the Rt. Hon. Frederick Wrench, Killacoona, Ballybrack: *s.* Blaze 2nd 2376. *d.* Bay Clara 14120 *by* Chocolate Junior 4185; and **Optimistic**, grey gelding, foaled in 1905, bred by H. M. Davey, Maesmynan Hall, Afonwen: *s.* Kassimede 8207.

513 & 514 II. (£5, & R. N. for Champion.[1])—CAPT. BERTRAM W. MILLS, Redhill Farm, Edgware, Middlesex, for two black geldings.

Four-in-Hand Teams.

Class 94.—*Mares or Geldings.* (*To be shown before a Coach.*) [3 entries.]

A I. (£20, & Champion.[2])—WILLIAM ARTHUR BARRON, 91 Westbourne Terrace, Hyde Park, London, W., for four chestnuts.

C II. (£15, & R.N. for Champion.[2])—CAPT. BERTRAM W. MILLS, Redhill Farm, Edgware, Middlesex, for four blacks.

B III. (£10.)—MISS BROCKLEBANK, Wing Grange, Oakham, for four bays.

Trade Turnouts.[3]

Open to Owners within 20 miles of the Cardiff City Hall.

Class 95.—*Heavy Draught Mares or Geldings, having been worked by Farmers, Brewers, Builders, Timber Merchants, Railway Companies, Haulers, Tradesmen or Corporations, for not less than three months immediately prior to the date of the Show.* [15 entries.]

527 I. (£10.)—THE VICTORIA COAL COMPANY, 82 Crwys Road, Cardiff, for **Norman**, bay gelding, foaled in 1911, bred by Col. Fisher, Radyr Court, Cardiff.

523 II. (£5.)—J. MOON & SONS, 269, Bute Street Cardiff, for **Prince**, grey gelding, foaled in 1911, bred by R. Templeton Home Farm, Pontcanna, Cardiff.

516 III. (£3.)—THE CARDIFF RAILWAY COMPANY, Bute Docks, Cardiff, for **Clifford Lad**; bay gelding, aged, bred by C. G. Phillips, Church Farm, Castleton, Mon.

518 R. N.—GIBBON & SONS, LTD., Crwys Bridge, Cardiff, for **Smiler**.
C.—521, 525.

Class 96.—*Teams of Two Heavy Draught Mares or Geldings, having been worked by Farmers, Brewers, Builders, Timber Merchants, Railway Companies, Haulers, Tradesmen or Corporations, for not less than three months immediately prior to the date of the Show.* [5 entries.]

522 & 523 I. (£10.) J. MOON & SONS, 269 Bute Street, Cardiff, for **Captain**, grey gelding, foaled in 1912, bred by R. Templeton, Home Farm, Pontcanna, Cardiff; and **Prince** (see Class 95).

515 & 516 II. (£5.)—THE CARDIFF RAILWAY COMPANY, Bute Docks, Cardiff, for **Bishop**, chestnut gelding, aged, bred by Messrs. Williams Brothers, Chester; and **Clifford Lad** (see Class 95).

525 & 529 III. (£3.)—NICHOLAS & CO., LTD., Baltic Wharf, Newport, Mon., for **Boxer**, iron grey gelding, foaled in 1914; and **Short**, iron grey gelding, foaled in 1912.

520 & 521 R. N.—AUSTIN L. GREEN, 41 Westgate Street, Cardiff, for **Prince** and **Tom**.

Class 97.—*Light Vanner Mares or Geldings, suitable for and having been worked by Tradesmen for not less than three months immediately prior to the date of the Show, and regularly driven by the owners or their servants for the delivery of goods.* [6 entries.]

535 I. (£10.)—VICTORIA COAL COMPANY, 82 Crwys Road, Cardiff, for **Betty**, dark bay mare, foaled in 1911, bred by T. Evans, Craig-y-Parc., Pentyrch, Cardiff.

534 II. (£5.)—NOAH REES & SONS, 13 and 14 Working Street and Canal Side, Cardiff, for **Major**, grey gelding, foaled in 1913, bred by Edward Jenkins, Bigles Farm, Caden-on-Barry.

533 III. (£3.)—AUSTIN L. GREEN, 41 Westgate Street, Cardiff, for **Darling**, bay mare, foaled in 1912.

531 R. N. CARDIFF CITY TRAMWAYS DEPT., The Hayes, Cardiff, for **Robin**.

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[1] The "Manchester" Gold Challenge Cup, value Fifty Guineas, given by the Manchester (1916) Local Committee for the best Tandem in Class 93.

[2] Gold Challenge Cup, value Fifty Guineas, given by a Member of the R.A.S.E. for the best Team in Class 94.

[3] Prizes given by the Cardiff Local Committee.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 98.—*Light Mares or Geldings, suitable for and having been worked by Tradesmen for not less than three months immediately prior to the date of the Show, and regularly driven by the owners or their servants for the delivery of their goods.* [19 entries.]

479 I. (£10.)—**GRIFFITHS PHILLIPS**, Bronhenloy House, Ferndale, for **Mathias Reality**, black gelding, foaled in 1912.

542 II. (£5.)—**HENRY GRANT**, 70 Stacey Road, Cardiff, for **Lady Cardigan**, chestnut mare, foaled in 1913.

549 III. (£3.)—**W. O. PUGH**, 11 Arran Place, Roath, Cardiff, for **Rumney Success**, chestnut gelding, foaled in 1914, bred by H. G. Jenks, Carpenters Arms Hotel, Rumney.

541 R. N.—**JABEZ GOUGH**, Gough's Garage, Knight Street, Mountain Ash, for bay mare.
C.—537, 538, 539, 553.

Colliery Horses.[1]

Which have been working in the Pits since January 1 *and up to May* 31, 1919. *To be shown without tubs, in ordinary gears (not decorated), which have been in use since January* 1, 1919.

Open to Owners within 30 miles of the Cardiff City Hall.

Class 99.—*Mares or Geldings, not exceeding* 14·2 *hands.* [2 entries.]

555 I. (£10.)—**LEWIS MERTHYR CONSOLIDATED COLLIERIES, LTD.**, Trehafod, Pontypridd, for **Croydon**, brown gelding, foaled in 1913.

554 II. (£5.)—**ABERPERGWM COLLIERY CO., LTD.**, Glyn Heath, Glamorgan, for **Pergwm Countess**, black mare, foaled in 1912.

Class 100.—*Mares or Geldings, over* 14·2 *and not exceeding* 15·2 *hands.*
[No entry.]

Horses suitable for Colliery Work.[2]

The property of a bonâ fide *Tenant Farmer residing in South Wales or Monmouthshire. Colliery Proprietors not eligible to compete.*

Class 101.—*Geldings, aged* 3 *to* 7 *years, not exceeding* 15 *hands, most suitable for underground work.* [6 entries.]

556 I. (£7.)—**JOHN DAVIES & SONS**, Buttry Hatch Farm, Maesycwmmer, Mon., for **Captain**, bay Shire gelding.

560 II. (£4.)—**EVAN LEWIS**, Berllanlwyd Farm, Blackwood, Mon., for **Colonel**, chestnut Shire gelding, foaled in 1914.

557 III. (£1 10s.)—**JOHN DAVIES & SONS**, for **Colonel**, black Shire gelding.

559 R. N.—**EVAN LEWIS**, for **Captain**.
C.—561.

Class 102.—*Mares foaled in or before* 1916, *not exceeding* 15 *hands, most suitable for breeding Colliery Horses.* [1 entry.]
[No Award.]

JUMPING COMPETITIONS.[1]

Class A.—*Mares or Geldings.* [28 entries.]

24 I. (£20.)—**MRS. J. P. GLENCROSS**, The Lodge, Battenhall, Worcester, for **Ormond Boy**.
5 { Equal Prize of £7 10s. } **THOMAS GLENCROSS**, The Paddocks, Stoke Gifford, Bristol, for **Tradesman**.
25 { Equal Prize of £7 10s. } **FRANK ALLISON**, West Farm, Selby, Yorks, for **Temptress**.
18 IV. (£3.)—**F. VOLLER GRANGE**, Alvaston, Nantwich, for **Rufus**.
14 V. (£3.)—**F. W. RUDDER**, Dorridge, Birmingham, for **Fancy Man**.

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[1] Prizes given by the Cardiff Local Committee.
[2] Prizes given by the Bedwellty Agricultural Society.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class B.—*Mares or Geldings.* [23 entries.]

22 I. (£15.)—F. W. FOSTER, Etwall, Derby, for **Comet.**

5 { Equal Prize } FRANK ALLISON, West Farm, Selby, Yorks, for **Temptress.**
8 { of £7 10*s.* } F. VOLLER GRANGE, Alvaston, Nantwich, for **Rufus.**

10 IV. (£3.)—THOMAS GLENCROSS, The Paddocks, Stoke Gifford, Bristol, for **Tradesman.**

1 V. (£3.)—MAJOR C. L. T. WALWYN, D.S.O., M.C., R.H.A. Riding Establishment, Weedon, Northants, for **Stuck Again.**

Class C.—*Mares or Geldings.* [21 entries.]

16 I. (£10.)—FRANK ALLISON, West Farm, Selby, Yorks, for **Temptress.**

5 II. (£5.)—S. W. WOODALL, 49 New Street, Wellington, Salop. for **Tip Top.**

20 III. (£5.)—THOMAS GLENCROSS, The Paddocks, Stoke Gifford, Bristol, for **Tradesman.**

12 IV. (£3.)—F. VOLLER GRANGE, Alvaston Grange, Nantwich, for **Snowball.**

10 V. (£3.)—F. VOLLER GRANGE, for **Rufus.**

Class D.—*Champion Class. Mares or Geldings.* [23 entries.]

17 I. (£20.)—MRS. J. P. GLENCROSS, The Lodge, Battenhall, Worcester, for **Ormond Boy**

13 { Equal Prize } [1]F. W. FOSTER, Etwall, Derby, for **Comet.**
18 { for £7 10s. } THOMAS GLENCROSS, The Paddocks, Stoke Gifford, Bristol, for **Tradesman.**

4 IV. (£3.)—S. W. WOODHALL, 49 New Street, Wellington, Salop, for **Tip Top.**

3 V. (£3, & R. N. for Cup.[1])—FRANK ALLISON, West Farm, Selby, Yorks., for **Temptress.**

R. N.—3.

TROTTING COMPETITIONS.[2]

Class E.—*Mares, Stallions or Geldings, not exceeding* 14·3 *hands.* [3 entries.]

1 I. (£10.)—COLIN JONES, Garth Farm, Pontardawe, for **Little Silk**, chestnut gelding, foaled in 1913, bred by W. Richards, Llandebie; *s.* Silk Twist, *d.* Welsh Pony.

3 II. (£5.)—FRED PRESTON, 26 Dorset Street, Grangetown, Cardiff, for **Cardie**, light bay mare.

2 III. (£3.)—ROBERT DOWNEY, Bute Castle Hotel, Docks, Cardiff, for **By Word**, roan stallion, foaled in 1915.

Class F.—*Mares, Stallions or Geldings, over* 14·3 *hands.* [4 entries.]

1 I. (£10.)—EDWARD M. SCOTT, Mile End, Bridgend, for **Sultana Pandit**, bay mare.

3 II. (£5.)—MISS DOLLY HORNBLOW, 1 Nelson Street, Cardiff, for **Polly D.**, bay mare.

2 III. (£3.)—T. BROWN, 226 High Street, Swansea, for **Adjustable**, bay gelding.

Class G.—*Champion Handicap Class, for animals which have competed in Classes E. and F. only.* [7 entries.]

9 I. (£10.)—MISS DOLLY HORNBLOW, 1 Nelson Street, Cardiff, for **Polly D.**, bay mare,

11 II. (£5.)—FRED PRESTON, 26 Dorset Street, Grangetown, Cardiff, for **Cardie**, light bay mare.

14 III. (£3.)—EDWARD M. SCOTT, Mile End, Bridgend, for **Sultana Pandit**, bay mare.

Class H.—*Consolation Class.* [2 entries.]

13 I. (£5.)—T. BROWN, 226 High Street, Swansea, for **Adjustable**, bay gelding.

8 II. (£3.)—D. LEONARD JONES, Llwynon Farm, Llannon, Llanelly, for **Mary Twist**, black mare, foaled in 1913, bred by William Thomas, Cae Cotton, Llanelly; *s.* Silk Twist, *d.* Welsh mare.

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[1] Derby Victory Cup given by Lord Glanely.

[2] Prizes given by the Cardiff Local Committee.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

CATTLE.

Shorthorns.[1]

Class 103.—*Shorthorn Bulls, calved in* 1914, 1915, *or* 1916. [12 entries.]

572 I. (£10.)—ALBERT JAS. MARSHALL, Bridgebank, Stranraer, for **Edgcote Hero** 136371, red, born Sept. 19 1916, bred by the Edgcote Shorthorn Co., Edgcote Banbury; *s.* Earl of Kingston 120041 *d.* Evelwyn (vol. 59) *by* King Christian of Denmark 86316.

569 II. (£5.)—GEORGE HARRISON, Gainford Hall, Darlington, for **Ruler** 139156, red roan, born March 24, 1916, bred by E. G. S. Hornby, Dalton Hall, Burton, Westmoreland; *s.* Mountaineer 121693, *d.* Dalton Rosemary 3rd *by* Commander 1050 1.

563 III. (£3.)—H.M. THE KING, Royal Farms, Windsor, for **Windsor Norseman** 134385, red, born Nov. 28, 1915; *s.* Notlaw Boxer 127158, *d.* Nonpareil 54th (vol. 60, p. 669) *by* Mastodon 102989.

566 IV. (2.)—RICHARD CORNELIUS, Lutwyche Hall, Much Wenlock, Salop, for **Hindley Bridegroom** 131487, red, born March 29, 1915, bred by J. Pumphrey, Hindley Hall, Stocksfield-on-Tyne; *s.* Prince Albert 122098, *d.* Lundholme Orange Blossom (vol. 57, p. 1097) *by* Gartley Rosedale 102309.

571 R. N.—W. T. MALCOLM, Whittingehame Mains, East Lothian, and Dunmore, Stirlingshire, for **Emmeline's Beau.**
H.C.—570.

Class 104.—*Shorthorn Bulls, calved on or between January* 1, 1917, *and March* 31, 1917. [10 entries.]

578 I. (£10, & Champion.[2])—ALBERT JAMES MARSHALL, Bridgebank, Stranraer, for **Gartly Lancer,** red roan, born Feb. 6, bred by A. McG. Mennie, Brawlandknowes, Gartly; *s.* Cluny Royal Star 130259, *d.* Gartly Ann Lancaster (vol. 58, p. 775), *by* Golden Clipper 105619.

579 II. (£5.)—ALBERT JAMES MARSHALL, for **Pellipar Iris,** roan, born Feb. 19, bred by Lieut.-Col. R. J. L. Ogilby, D.S.O., Pellipar, Dungiven; *s.* Edgcote Regalia 125396, *d.* Pellipar Pansy (vol. 62, p. 998) *by* Count Crystal 108276.

583 III. (£3.)—EDWARD SMITH, 107 Bransford Road, Worcester, for **Dandy Clipper,** roan, born March 31, bred by Messrs. J. & G. Young, Tarrel, Fearn, N.B.; *s.* Redgerton Dandie 133 16, *d.* Newton Clipper 4th *by* Brilliant Star 76240.

584 R. N.—FRANK B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for **Swinton Lord Broadhooks.**
H. C.—581. C.—576.

Class 105.—*Shorthorn Bulls, calved on or between April* 1, 1917, *and December* 31, 1917. [18 entries.]

594 I. (£10, & R.N. for Champion.[2])—JAMES SIDEY, Hallhole, Coupar Angus, N.B., for **Kilsant Wanderer,** red, born Sept. 20, bred by Sir Owen Philips, G.C.M.G., Coomb, Llangain, Carmarthen; *s.* B pton Reuben 114127, *d.* Notgrove Ruth (vol. 60, p. 715) *by* Notgrove Whittington 112691.

590 II. (£5.)—ALBERT JAS. MARSHALL, Bridgebank, Stranraer, for **Wexham Heir,** red roan, born May 1, bred by Walter Spurr, Anderby, Alford, Lincs; *s.* Kingston's Heir 131777, *d.* Wexham Lady 3rd (vol. 62, p. 1100), *by* Riby White Count 113041.

585 III. (£3.)—R. J. BALSTON'S EXORS., Bilsington Priory, Ashford, Kent, for **Bilsington Golden Conqueror,** dark roan, born Oct. 15; *s.* Dewlaps Royal Sovereign 125170, *d.* Bilsington Rosemary 4th *by* Golden Cloud 108750.

592 IV. (£2.)—OLIVER W. PORRITT, Hotchley Farm, East Leake, Loughborough, for **Moresby Artilleryman,** roan, born April 5, bred by Mrs. Burnyeat, Millgrove, Moresby, Whitehaven; *s.* Collynie Gold Cup 124842, *d.* Moresby Augusta (vol. 61, p. 641) *by* Lavender Regal King 116185.
H. C.—599, 602. C.—596.

585, 586, 622 I. (Special I.[3])—R. J. BALSTON'S EXORS., for **Bilsington Golden Conqueror, Bilsington Imperator and Bilsington Controller.**

636, 637, 638 II. (Special II.[3])—LORD MERTHYR, for **Hean Bugler, Hean Cincinnatus and Hean Concord.**

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[1] £80 towards these Prizes were given by the Shorthorn Society.

[2] Champion Prize of £20 given by the Shorthorn Society for the best Bull in Classes 103—107. A Silver Medal is given by the Shorthorn Society to the Breeder of the Champion Bull.

[3] Special Prizes of £15 First Prize, and £10 Second Prize, given for the best groups of three Bulls bred by Exhibitor in Classes 103—107.

£40 towards these Special Prizes ([3] & [1] p. lxxi.) were given by the Shorthorn Society.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 106.—*Shorthorn Bulls, calved on or between January* 1, 1918, *and March* 31, 1918. [19 entries.]

603 I. (£10.)—H.R.H. THE PRINCE OF WALES, K.G., Stoke Climsland, Cornwall, for **Christian King**, roan, born January 19; *s.* Butterfly Knight 130029, *d.* Adbolton Rosy Queen *by* King Christian of Denmark 86316.

610 II. (£5.)—C. E. GUNTHER, Tongswood, Hawkhurst, Kent, for **Tongswood Helpmate**, roan, born March 1; *s* Knight Lavender 121046, *d.* Tongswood Helena (vol. 58, p. 606) *by* Lord Augustus 109216.

613 III. (£3.)—ALBERT JAS. MARSHALL, Bridgebank, Stranraer, for **Lothian Lex**, white, born January 5, bred by the Earl of Rosebery and Midlothian, P.C., K.T., Dalmeny House, Edinburgh; *s.* Lex of Cluny 109170, *d.* Corston Lustre 6th (vol. 61, p. 644) *by* Regal King Goldie 117294.

611 IV. (£2.)—GEORGE HARRISON, Gainford Hall, Darlington, for **Mullanteau Jack**, roan, born March 3, bred by Mrs. C. M. Kennedy, Mullanteau, Stewartstown, Co. Tyrone; *s.* Marlock 137851, *d.* Killymeal Betty (vol. 60, p. 973) *by* Golden Knight 111927.

619 V. (£2.)—WALTER SPURR, Wexham, Anderby, Alford, Lincs., for **Wexham Heir 10th**, roan, born March 8; *s.* Kingston's Heir 131777, *d.* Osberton Miss e (vol. 62, p. 100) *by* Goldmine 111940.

617 R.N.—LORD SHERBORNE, Sherborne Park, Northleach, for **Sherborne King Christian**.

H. C.—614, 615.

Class 107.—*Shorthorn Bulls, calved on or between April* 1, 1918, *and December* 31, 1918. [23 entries.]

635 I. (£10.)—ALBERT JAS. MARSHALL, Bridgebank, Stranraer, for **Fairlawne Forester**, roan, born April 2, bred by W. M. Cazalet, Fairlawne, Tonbridge; *s.* Collynie Clipper King 135816, *d.* Murthly Princess Royal (vol. 61, p. 926) *by* Merry Victor 116563.

623 II. (£5.)—MAJOR CLIVE BEHRENS, Swinton Grange, Malton, for **Swinton Rosicrucian 2nd**, roan, born April 4; *s.* Swinton Blood Royal 133880, *d.* Gainford Rosebud 3rd (vol. 6[illegible], p. 811) *by* Golden Fortune 111922.

639 III. (£3.)—LORD MIDDLETON, Birdsall, Malton, for **Birdsall Conqueror 3rd**, light roan, born June 3; *s.* Birdsall Conqueror 107914, *d.* Sweetheart 75th *by* Birdsall Courier 98102.

641 IV. (£2.)—JOSEPH PUMPHREY, Hindley Hall, Stocksfield-on-Tyne, for **Hindley Fortune**, roan, born Aug. 13; *s.* Augusta's Diamond 2nd 118650, *d.* Hindley Fragrance 2nd (vol. 60, p. 1021) *by* Starlight 107148.

638 V. (£2.)—LORD MERTHYR, Hean Castle, Saundersfoot, Pembrokeshire, for **Hean Concord**, red, born April 22; *s.* Collynie Chancellor 119543, *d.* Clipper Queen (vol. 62, p. 265) *by* Zero 104459.

644 R. N.—FRANK B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for **Western Prince**.

H. C.—622. C.—627.

Class 108.—*Shorthorn Cows (in-milk), calved in or before* 1915. [7 entries.]

650 I. (£10.)—W. T. MALCOLM, Whittingehame Mains, East Lothian, and Dunmore, Stirlingshire, for **Princess Royal Beauty** (vol. 60, p. 925), roan, born Oct. 22, 1913, calved Jan. 4, 1919; *s.* Gunthorpe Beau 108822, *d.* Princess Royal C. (vol. 57, p. 542) *by* Chanticleer 91192.

649 II. (£5.)—W. M. CAZALET, Fairlawne, Tonbridge, for **Nonpareil Fairy** (vol. 60, p. 596), dark roan, born April 2, 1913, calved Dec. 29, 1918, bred by David Anderson, North Loirston, Aberdeen; *s.* Mastodon 102989, *d.* Nonpareil 41st (vol. 57, p. 550) *by* Golden Fame 76786.

647 III. (£3.)—R. J. BALSTON'S EXORS., Bilsington Priory, Ashford, Kent, for **Blythesome 39th** (vol. 60, p. 613), red, born Jan. 16, 1913, calved Jan. 6, 1919; *s.* Bilsington Favourite 107898, *d.* Blythesome 36th *by* Choir Boy 91238.

651. R.N.—LORD TREDEGAR, Tredegar Park, Newport, Mon., for **Adbolton Amelia 4th**.

645, 646, 647 I. (Special.[1])—R. J. BALSTON'S EXORS., for **Bilsington Orphan 2nd, Bilsington Rosebud 7th and Blythesome 39th.**

Class 109.—*Shorthorn Heifers (in-milk), calved in* 1916. [1 entry.]

652 I. (£10, & Champion.[2])—W. M. CAZALET, Fairlawne, Tonbridge, for **Proud Dorothy** (vol. 63, p. 800), red, born March 17, calved April 23, 1919, bred by William Duthie, Collynie, Tarves, Aberdeenshire; *s.* Lothian Augustus 116354, *d.* Whiterow Lady Dorothy (vol. 5[illegible], p. 729) *by* Hawthorn Champion 99098.

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[1] Special Prize of £15 given for the best group of three Cows or Heifers bred by Exhibitor in Classes 108—113.

£40 towards these Special Prizes ([3] p. lxx. & [1]) were given by the Shorthorn Society.

[2] Champion Prize of £20 given by the Shorthorn Society for the best Cow or Heifer in Classes 108—113. A Silver Medal is given by the Shorthorn Society to the Breeder of the Champion Cow or Heifer.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 110.—*Shorthorn Heifers, calved on or between January* 1, 1917, *and March* 31, 1917. [1 entry.]

653 I. (£10.)—FRANK BIBBY, Hardwicke Grange, Shrewsbury, for **Hardwicke Cordey**, roan, born March 8; *s.* Favourite Rosewood 120227, *d.* Hardwicke Countess (vol. 59, p. 552) *by* Barteliver Trump 2nd 10415.

Class 111.—*Shorthorn Heifers, calved on or between April* 1, 1917, *and December* 31, 1917. [3 entries.]

654 I. (£10)—W. M. CAZALET, Fairlawne, Tonbridge, for **Garbity Princess Royal 4th**, red, born Dec. 17, bred by James McWilliam, Garbity, Orton; *s.* Edgcote Flatterer 125374, *d.* Garbity Princess Royal 3rd (vol. 62, p. 939) *by* Golden Favourite 115592.

Class 112.—*Shorthorn Heifers, calved on or between January* 1, 1918, *and March* 31, 1918. [8 entries.]

664 I. (£10, & R.N. for Champion.[1])—W. M. SCOTT, Nether Swell Manor, Stow-on-the Wold, Glos., for **Gay Lassie 13th**, white, born March 17; *s.* Windsor Lad 113735, *d.* Beatrice (vol. 60, p. 1059) *by* Primrose Star 106555.

658 II. (£5.)—SIR RICHARD COOPER, BT., M.P., Billington Manor, Leighton Buzzard, for **Shenstone Colleen**, light roan, born Jan. 26; *s.* Secret Sentry 139231, *d.* Colleen Clara (vol. 61, p. 1125) *by* Gipsy King 115536.

657 III. (£3.)—W. M. CAZALET, Fairlawne, Tonbridge, for **Bessie Lee**, roan, born March 23, bred by James Durno, Uppermill, Tarves; *s.* Mesmerist 121570, *d.* Westertown Bessie (vol. 58, p. 559) *by* Crown Prince 101923.

663 R. N.—OLIVER W. PORRITT, Hotchley Farm, East Leak, Loughborough, for **Sweet Fragrance.**

Class 113.—*Shorthorn Heifers, calved on or between April* 1, 1918, *and December* 31, 1918. [15 entries.]

668 I. (£10.)—SIR RICHARD COOPER, BT., M.P., Billington Manor, Leighton Buzzard, for **Shenstone Clipper 3rd**, light roan, born May 14; *s.* Scottie 133446, *d.* Clipper Queen (vol. 61, p. 897) *by* Coming Storm 108242.

671 II. (£5.)—HENRY GARNER, Lily Green Farm, Alvechurch, for **Hean Princess Royal**, red and little white, born April 7; *s.* Hean Goldfinder 137017, *d.* Albert Princess Royal 8th (vol. 57, p. 429) *by* Bapton Mischief 97946.

674 III. (£3.)—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Reading, for **Basildon Beauty Groat**, light roan, born May 1; *s.* Ardlethan Sarant 134672, *d.* Basildon Groat *by* Edgcote Poet 115278.

673 IV. (£2.)—CHARLES WALFORD KELLOCK, Highfields, Audlem, Cheshire, for **Highfields Parsley 9th**, white, born May 19; *s.* Prince Butterfly 138543, *d.* Clive Parsley 3rd (vol. 57) *by* Alston Lark 85155.

677 V. (£2.) — W. M. SCOTT, Nether Swell Manor, Stow-on-the-Wold, Glos., for **Lavender of Sillyton**, dark roan, born May 4; *s.* Windsor Lad 113735, *d.* Hean Lavender 3rd (vol. 62, p. 953) *by* Royal Roman 122652.

665 R. N.—H.M. THE KING, Royal Farms, Windsor, for **Windsor Jealousy.**

H. C.—666.

Dairy Shorthorns.[2]

Class 114.—*Dairy Shorthorn Bulls, calved in* 1917. [13 entries.]

691 I. (£10, & Champion.[3])—CAPT. H. FITZ-HERBERT WRIGHT, Yeldersley Hall, Ashbourne, for **Kingsthorpe Regent**, white, born Aug. 25, bred by F. H. Thornton, Kingsthorpe Hall, Northampton; *s.* Somerford Pilot 128276, *d.* Somerford Flower 2nd *by* Whitewall Regent 97683.

682 II. (£5, & R. N. for Champion.[3])—R. W. HOBBS & SONS, Kelmscott, Lechlade, for **Kelmscott Acrobat 22nd**, dark roan, born June 18; *s.* Kelmscott Juggler 116052, *d.* Rose 43rd *by* Kelmscotonian 18th 92094.

689 III. (£3.)—MAJOR THE DUKE OF WESTMINSTER, G.C.V.O., D.S.O., Eaton Hall, Chester, for **Rockley Baron**, roan, born Nov. 30, bred by H. de H. Whatton, Rockley Manor, Marlborough, Wiltshire; *s.* Rockley Darlington 138933, *d.* Rockley Barrington (vol. 61) *by* Oxford Count 109592.

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[1] Champion Prize of £20 given by the Shorthorn Society for the best Cow or Heifer in Classes 108—113. A Silver Medal is given by the Shorthorn Society to the Breeder of the Champion Cow or Heifer.

[2] £20 towards these Prizes were given by the Dairy Shorthorn Association and £20 by the Shorthorn Society.

[3] Champion Prize of £10 given by the Dairy Shorthorn Association, for the best Bull in Classes 114-116.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

686 R. N.—MR. & MRS. STANTON, Snelston Hall, Ashbourne, for **Thornby Danger Signal.**
H. C.—680, 690.

682, 715, 760 (Challenge Cup.[1])—R. W. HOBBS & SONS, for **Kelmscott Acrobat 22nd, Hawthorn 9th and Sybil 26th.**

693, 754, 755 (R. N. for Challenge Cup.[1])—C. R. W. ADEANE, C.B., for **Babraham Clarence Babraham Light and Babraham Convolvulus.**

Class 115.—*Dairy Shorthorn Bulls, calved on or between January* 1, 1918, *and March* 31, 1918. [9 entries.]

697 I. (£10.)—JOHN CHIVERS, Wychfield, Cambridge, for **Wild Don,** red, born Jan. 12 *s.* Oxford Don 132607. *d.* Wild Eyebright 14th (vol. 56, p. 1174) *by* Rowbury 75491.

696 II. (£5.)—H. A. BROWN, Croft House, Grendon, Atherstone, for **Grendon Barrington,** light roan, born March 7; *s.* Barrington Snowstorm 2nd 124184, *d.* Barrington Welcome 2nd *by* Proud Waterloo 109785.

698 III. (£3.)—JOHN LUCAS, Isle Park, Bicton, Shrewsbury, for **Isle Colossus,** red, born March 14, bred by J. Ellis Potter, Moor Hall, Aughton, Ormskirk; *s.* Barrington's Beau 129515, *d.* Aughton Curly 2nd (vol. 60, p. 1012) *by* Salmon's Heir 110079.

693 R. N.—C. R. W. ADEANE, C.B., Babraham Hall, Cambridge, for **Babraham Clarence.**
H. C.—701. C.—699, 700.

Class 116.—*Dairy Shorthorn Bulls, calved on or between April* 1, 1918, *and December* 31, 1918. [10 entries.]

705 I. (£10.)—H. A. BROWN, Croft House, Grendon, Atherstone, for **Grendon Royal Sovereign,** red, born April 4; *s.* Lord Nottingham 116317, *d.* Strawberry 22nd *by* Dairy Ingram 105184.

707 II. (£5.)—R. W. HOBBS & SONS, Kelmscott, Lechlade, for **Kelmscott Juggler 34th,** roan, born May 9; *s.* Trickster 4th 118058, *d.* Starlight 14th (vol. 58, p. 548) *by* Slinden Bean 107101.

704 III. (£3.)—CAPT. C. J. K. MAURICE, Manton Grange, Marlborough, for **Major Key,** red, born Aug. 14; bred by J. A. Attwater, Dry Leaze, Cirencester; *s.* Kelmscott Solus 137306, *d.* Leazow Musical 2nd *by* Lord Pailful 109243.

706 R. N.—GEORGE HARRISON, Gainford Hall, Darlington, for **Gainford Dual Capacity.**
H. C.—708, 710. C.—709, 711.

Class 117.—*Dairy Shorthorn Cows (in-milk), calved in or before* 1912. [19 entries.]

714 I. (£10.)—MAJOR GERARD J. BUXTON, Tockenham Manor, Swindon, for **Misselthrush** (vol. 59, p. 975), white, born Aug. 12, 1912, calved June 17, 1919, bred by Lord Rothschild, Tring, Herts.; *s.* Ranger 103487, *d.* Mistletoe (vol. 55, p. 1102) *by* Traveller 93667.

717 II. (£5.)—ROBERT L. MOND, Combe Bank, Sevenoaks, for **Linda's Charm** (vol. 58, p. 583), red, born Oct. 5, 1910, calved June 15, 1919 bred by G. Gerrard; *s.* Merry Lorn 100046, *d.* Queen Linda *by* Northern Star 92690.

715 III. (£3.)—R. W. HOBBS & SONS, Kelmscott, Lechdale, for **Hawthorn 9th** (vol. 59, p. 754), roan, born Nov. 26, 1910, calved May 20, 1919; *s.* Royal Hampton 11th 96908, *d.* Hawthorn 6th *by* Western Duke 80238.

726 IV. (£2.)—MAJOR THE DUKE OF WESTMINSTER, G.C.V.O., D.S.O., Eaton Hall, Chester, for **Marjorie Grey** (vol. 59, p. 657), roan, born May 12, 1912, calved June 18, 1919, bred by R. Douthwaite, Thornship, Shap, Westmoreland; *s.* Wellborn 107459, *d.* Lucy Grey 2nd (vol. 57) *by* Nonsuch 99791.

718 R. N.—ROBERT L. MOND, for **Marian 4th.**
H. C.—716, 723. C.—712, 728.

Class 118.—*Dairy Shorthorn Cows (in-milk), calved in* 1913 *or* 1914. [16 entries.]

746 I. (£10.)—THE MARQUIS OF ZETLAND, Aske Hall, Richmond, Yorks., for **Betsy Grey 2nd** (vol. 60, p. 740), dark roan, born April 5, 1913, calved June 1, 1919, bred by R. Douthwaite, Thornship; *s.* Wellborn 107459, *d.* Betsy Grey (vol. 57, p. 682) *by* Nonsuch 99791.

744 II. (£5.)—CAPTAIN ARNOLD S. WILLS, Thornby Hall, Northampton, for **Thornby Foggathorpe 2nd** (vol. 61, p. 1114), white, born Sept. 11, 1914, calved June 8, 1919; *s.* Dreadnought 102049, *d.* Dolphinlee Foggathorpe 3rd (vol. 58, p. 683) *by* Lancaster Victor 99312.

732 III. (£3.)—H. A. BROWN, Croft House, Grendon, Atherstone, for **Blooming Rose,** roan, born May 2, 1914, calved May 7, 1919, bred by W. Haugh, Walby, Carlisle; *s.* Bradford Prince 111123, *d.* Eden Rose *by* Ireby Signet 95549.

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[1] Silver Challenge Cup, value 50 guineas, given through the Dairy Shorthorn Association for the best Group of one Bull and two Cows or Heifers in Classes 114-120. Two at least of the animals must have been bred by the exhibitor.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

736 **IV. (£2.)**—W. G. MILLAR, Bampton, Oxon, for **Cockerham Purity** (vol. 61, p. 933), light roan, born Feb. 16, 1914, calved May 4, 1919, bred by Nelson & Sons, Cockerham, Lancaster; *s.* Spency Beau 117836, *d.* Purity (vol. 58, p. 894) *by* Beauty's Heir 94260.

742 **R. N.**—EUSTACE ABEL SMITH, Longhills, Lincoln, for **Longhills Leaf.**
H. C.—733.

Class 119.—*Dairy Shorthorn Cows (in milk), calved in* 1915. [6 entries.]

749 **I. (£10 & Champion.[1])**—J. MOFFATT, Spital, Kendal, for **Barrington Countess** (vol. 62, p. 961), roan, born Aug. 1, calved June 13, 1919; *s.* Lord Nottingham 116317, *d.* Barrington Princess Ena *by* Hindley Private 108938.

751 **II. (£5.)**—OLYMPIA AGRICULTURAL COMPANY, LTD., Wrest Park, Ampthill, for **Lilac 9th** (vol. 62, p. 925) roan, born Sept. 27, calved June 5, 1919 bred by the late Lord Lucas, Wrest Park, Ampthill; *s.* Heirloom 120692, *d.* Lilac 7th (vol. 59, p. 869) *by* Lowther Chieftain 106070.

Class 120.—*Dairy Shorthorn Heifers (in-milk), calved in* 1916. [21 entries.]

763 **I. (£10, & R.N. for Champion.[1])**—W. G MILLAR, Bampton, Oxon, for **Aughton Laurestina 3rd** (vol. 63, p 1090), light roan, born June 14, calved March 7, 1919, bred by J. Ellis Potter, Moor Hall, Aughton, Ormskirk; *s.* Scarborough 128048, *d.* Aughton Laurestina (vol 58, p. 855) *by* Newton Enterprise 106352.

768 **II. (£5.)**—M. & P. PERKINS, The Bowers, Holme Lacy, Hereford, for **Bloom 20th** (vol 63, p. 897), roan, born Feb. 3, calved May 25, 1919, bred by R. W. Hobbs & Sons, Kelmscott, Glos.; *s.* Creme de Menthe 119683, *d.* Bloom 18th (vol. 60, p. 833) *by* M. C. 11th 103003.

755 **III. (£3.)** C. R. W. ADEANE, C.B., Babraham Hall, Cambridge, for **Babraham Convolvulus** (vol. 63, p. 625), red and white, born Aug. 8, calved March 16, 1919; *s.* Lord Lee 2nd 121257, *d.* Babraham Columbine (vol 59, p. 501), *by* Babraham Victor 10772[illegible]

760 **IV. (£2.)**—R. W. HOBBS & SONS, Kelmscott, Lechlade, for **Sybil 26th** (vol. 63, p. 901), red and white, born Feb. 23, calved May 8, 1919; *s.* Creme de Menthe 119683, *d.* Sybil 19th (vol. 60, p. 837) *by* Sir Rafe 23rd 110205.

754 **R. N.**—C. R. W. ADEANE, C.B., for **Babraham Light.**
H. C.—756, 764, 774. **C.**—758, 770.

Non-Pedigree Dairy Shorthorns.

Class 121.—*Cows (in-milk.)*

[No entry.]

Class 122.—*Heifers (in-milk), calved in* 1916.

[No entry.]

Lincolnshire Red Shorthorns.[2]

Class 123.—*Lincolnshire Red Shorthorn Bulls, calved in* 1913, 1914, 1915, *or* 1916. [3 entries.]

775 **I. (£10, & Champion.[3])**—E. H. CARTWRIGHT, North Elkington Manor, Louth, Lincs., for **Hallington Harlaxton** 11595, born October 8, 1914, bred by Wm. Chatterton, Hallington, Louth; *s.* Bonby Excursionist 26th 5846, *d. by* Walmsgate Mate 2nd 1722.

776 **II. (£5 & R. N. for Champion.[3])**—ROBERT CHATTERTON, Welbourn Hall, Lincoln, for **Otby Emperor** 11814, born March 30, 1915, bred by Edward Abraham, Otby House, Lincoln; *s.* Bonby Emperor 6598, *d.* Otby Joan 2nd (vol. 2, p. 179) *by* Otby Eclipse 2286.

777 **III. (£3.)**—JOHN SEARBY, Crofts, Wainfleet, Lincs., for **Pepperthorpe Croft** 12797, born March 26, 1915, bred by J. L. Picker, Pepperthorpe, Wainfleet, Lincs.; *s.* Bilsby Gwyn 8115 *d. by* Fulletby Champion 4824.

Class 124.—*Lincolnshire Red Shorthorn Bulls, calved in* 1917. [3 entries.]

779 **I. (£10.)**—PENDLEY STOCK FARMS, Pendley, Tring, Herts, for **Pendley Record** 13746, born May 22, bred by J. G. Williams, Pendley, Tring; *s.* Scampton King of the Rubies 7122, *d.* Pendley Rose (vol. 19, p. 381) *by* Scampton Luxury 7834.

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[1] Champion Prize of £10 given by the Shorthorn Society for the best Cow or Heifer in Classes 117-120. A Silver Medal is given by the Shorthorn Society to the breeder of the Champion Dairy Shorthorn Cow.

[2] £80 towards these Prizes were given by the Lincolnshire Red Shorthorn Association.

[3] Champion Prize of £10 given by the Lincolnshire Red Shorthorn Association for the best Bull in Classes 123-125.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

780 II. (£5.)—M. M. WEBB & SONS, Melton Ross, Barnetby, Lincs., for **Risby Danby** 13778, born January 6, bred by Harry Abraham, Risby Manor, Tealby, Lincs.; *s.* Bonby Emperor 6598, *d.* Normanby Milkmaid (vol. 20, p. 303) *by* Scampton Lucitanus 7875.

778 III. (£3.)—J. K. FOSTER, Coombe Park, Whitchurch, Oxon., for **Coombe Grenadier 7th** 13335, born Feb. 11; *s.* Saltfleet Victor 10179, *d.* Brandon Collingham 4th (vol. 16, p. 291) *by* Brandon Grenadier 4274.

Class 125.—*Lincolnshire Red Shorthorn Bulls, calved in* 1918. [4 entries.]

784 I. (£10.)—PENDLEY STOCK FARMS, Pendley, Tring, Herts., for **Pendley Hero**, bor Feb. 26, bred by J. G. Williams, Pendley Manor, Tring; *s.* Scampton Marvel 8517 *d.* Keddington Carrett 3rd (vol. 22, p. 451), *by* Yarboro' Marshman 8702.

783 II. (£5.)—J. K. FOSTER, Coombe Park, Whitchurch, Oxon., for **Kirmington Ruby King 44th**, born May 2, bred by George Marris, Kirmington, Brocklesby, Lincs.; *s.* Scampton King of the Rubies 7122, *d.* Kirmington Rose 41st *by* Kirmington Wandering Chief 6183.

782 III. (£3.)—J. K. FOSTER, for **Coombe King of Daisies 8th**, born July 18; *s.* Coombe Grenadier 5th 10583, *d.* Stenigot Daisy 26th (vol. 19, p. 324) *by* Keddington Comet 3443.

781 R. N.—COL. C. DE PARAVICINI, St. Vincents, Grantham, for **Beacon Hill Rufus.**

Class 126.—*Lincolnshire Red Shorthorn Cows* (*in-milk*), *calved in or before* 1915. [5 entries.]

789 I. (£10, & R. N. for Champion.[1])—PENDLEY STOCK FARMS, Pendley, Tring, Herts, for **Pendley Royal Ruby**, (vol. 22, p. 453), born April 8, 1913, calved Feb 17, 1919, bred by T. H. B. Freshney, Grainthorpe, Lincs.; *s.* Saltfleet Ruby Champion 8509, *d.* Saltfleet Ruby *by* Saltfleet Imperialist 5459.

788 II. (£5.)—PENDLEY STOCK FARMS, for **Pendley Rose** (vol. 19, p. 381), born Feb. 24, 1912, calved April 25, 1919, bred by W. B. Swallow, Wootton Lawn, Ulceby Lincs.; *s.* Scampton Luxury 7884, *d.* Horkstow Lilac (vol. 14, p. 298) *by* Bumper 2nd 1793.

787 III. (£3.)—J. K. FOSTER, Coombe Park, Whitchurch, Oxon., for **Brandon Collingham 4th** (vol. 16, p. 291), born Aug. 3, 1907, calved Jan. 1, 1919, bred by John Langham, Park Valley, Nottingham; *s.* Brandon Grenadier 4274, *d.* Brandon Collingham *by* Brandon Lord Chancellor 2121.

786 R. N.—JOHN EVENS & SON, Burton, Lincoln, for **Burton Roughy.**

Class 127.—*Lincolnshire Red Shorthorn Cows or Heifers* (*in-milk*), *calved in or before* 1916, *showing the best milking properties.* [4 entries.]

791 I. (£10.)—JOHN EVENS & SON, Burton, Lincoln, for **Burton Cork 15th** (vol. 22, p. 359), born April 14, 1913, calved May 3, 1919; *s.* Burton Excellence 7596, *d.* Burton Cork 10th (vol. 19, p. 313) *by* Mr. Cherry 6211.

792 II. (£5.)—JOHN EVENS & SON, for **Burton Countess**, (vol. 24, p. 340), born in March, 1914, calved April 26, 1919, bred by R. S. Hall, Nocton, Lincoln; *s.* Toynton Excursionist 2nd 14132, *d. by* Digby Herald 4th 14131.

793 III. (£3.)—JOHN EVENS & SON, for **Burton Suttie** (vol. 24, p. 342), born in March, 1913, calved May 29, 1919, bred by H. Sutton, Broxholm, Lincoln; *s.* Anderby Fisher 8713.

Class 128.—*Lincolnshire Red Shorthorn Heifers* (*in-milk*), *calved in* 1916. [2 entries.]

794 I. (£10.)—PENDLEY STOCK FARMS, Pendley, Tring, Herts., for **Pendley Treasure** (vol. 24, p. 452), born May 12, calved Feb. 23, 1919, bred by J. G. Williams, Pendley Manor, Tring; *s.* Croxton Ruby 33rd 8939, *d.* Donnington Prima Donna 6th *by* Willoughby Artilleryman 8027.

795 II. (£5.)—PENDLEY STOCK FARMS, for **Pendley Yarboro' Ruby**, born April 20, calved April 16, 1919, bred by E. Bourne, George Street, Louth, Lincs.; *s.* Saltfleet Marshman 4985, *d. by* Stenigot Duchess Gwynne 5633.

Class 129.—*Lincolnshire Red Shorthorn Heifers, calved in* 1917. [3 entries.]

797 I. (£10 & Champion.[1])—PENDLEY STOCK FARMS, Pendley, Tring, Herts, for **Pendley Martha** (vol. 24, p. 452), born March 11, bred by G. E. Sanders, Scampton, Lincoln; *s.* Scampton Quality 11912, *d. by* Keddington Searchlight 4883.

798 II. (£5.)—PENDLEY STOCK FARMS, for **Pendley Rose 5th**, born April 15, bred by J. G. Williams, Pendley Manor, Tring; *s.* Scampton Paragon 10991, *d.* Pendley Rose 2nd (vol. 22, p. 452) *by* Croxton Ruby 33rd 8939.

796 III. (£3.)—COL. C. DE PARAVICINI, St. Vincents, Grantham, for **Beacon Hill 11th** (vol. 24, p. 411), born March 19; *s.* Croxton Ruby 63rd 11482, *d.* Beacon Hill 8th (vol. 24, p. 411) *by* Elkington Scamp 8988.

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[1] Champion Prize of £10 given by the Lincolnshire Red Shorthorn Association for the best Cow or Heifer in Classes 126-130.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 130.—*Lincolnshire Red Shorthorn Heifers, calved in* 1918. [9 entries.]

807 I. (£10.)—PENDLEY STOCK FARMS, Pendley, Tring, for **Pendley Rosetta**, born April 23, bred by J. G. Williams, Pendley Manor, Tring; *s.* Scampton Quality 11912, *d.* Scampton Rosetta *by* Brandon Grenadier 4274.

806 II. (£5.)—PENDLEY STOCK FARMS, for **Pendley Princess 9th**, born March 17, bred by J. G. Williams, Pendley Manor, Tring; *s.* Scampton Marvel 8517, *d.* Pendley Princess 8th *by* Croxton Ruby 33rd 8939.

801 III. (£3.)—ADMIRAL SIR DAVID BEATTY, Brooksby Hall, Leicester, for **Judy**, born Jan. 8; *s.* Normanby Radiance 10902, *d.* Brooksby Wanton 4th *by* Scampton Majestic 8513.

803 R. N.—COL. C. DE PARAVICINI, St. Vincent's, Grantham, for **Beacon Hill Rose**.
H. C.—799, 800.

Herefords.[1]

Class 131.—*Hereford Bulls, calved in* 1914, 1915, *or* 1916. [5 entries.]

809 I. (£10, & Champion.[2])—PERCY EDWARDS BRADSTOCK, Garford, Garkhill, Hereford, for **Goodenough** 33710, born Dec. 28, 1915, bred by William Griffiths, Alder's End, Tarrington, Hereford; *s.* Royal Oyster 30993, *d.* Godiva (vol. 42, p. 561) *by* Sir Bedivere 27228.

810 II. (£5.)—SIR J. R. G. COTTERELL, BT., Garnons, Hereford, for **Newton Dogma** 32842, born June 11, 915, bred by G. Butters, Hill House, Newton, Leominster; *s.* Newshead 30814, *d.* Mandeline 3 *by* Sailor Prince 26465.

811 III. (£3.)—HENRY R. EVANS, Court of Noke, Pembridge, for **Loxley Controller**, born Jan. 7, 1916, bred by G. C. Otley, Meer Hill, Loxley, Warwick; *s.* Oyster's Promise 29937, *d.* Sunlight (vol. 46, p. 803) *by* Broadward Gambler 26694.

808 R. N.—H. M. THE KING, Royal Farms, Windsor, for **Paymaster**.
H. C.—812.

Class 132.—*Hereford Bulls, calved in* 1917. [13 entries.]

813 I. (£10, & R. N. for Champion.[2])—SIR J. R. G. COTTERELL, BT., Garnons, Hereford, for **Sovereign** 35628, born Feb. 1; *s.* Saladin 31957, *d.* Ladybank *by* Happy-go-Lucky 25422.

823 II. (£5.)—H. WESTON & SONS, The Bounds, Much Marcle, Herefordshire, for **Alder's Protector** 34537, born Jan. 18, bred by W. Griffiths Alder's End, Tarrington, Hereford; *s.* Eaton Royalist 31446, *d.* Peony (vol. 47, p. 581) *by* Starlight 28754.

814 III. (£3.)–HENRY R. EVANS, Court of Noke, Pembridge, for **Cicero** 24760, born Feb. 25; *s.* Carranza 31329, *d.* Nonpareil (vol. 49, p. 481) *by* Marcus 27003.

815 IV. (£2.)—CAPT. R. T. HINCKES, Mansel Court, Mansel Lacy, Hereford, for **Mansel Rightful** 35289, born Jan. 21; *s.* Starlight 28754, *d.* Rose (vol. 43, p. 772) *by* Lord Lieutenant 22323.

821 R. N.—JOHN WALKER, Knightwick Manor, Worcester, for **Peacemaker**.
H. C.–818, 824, 825. C.—822.

824, 825, 882 (Special I.[3])—OWEN WILLIAMS, Crossaways, Cowbridge, for **Aldersend Masterpiece**, **Xmas Gift 2nd** and **Bounteous**.

Class 133.—*Hereford Bulls, calved in January or February*, 1918. [26 entries.]

833 I. (£10.)—SIR J. R. G. COTTERELL, BT., Garnons, Hereford, for **Lovelace**, born Jan. 9; *s.* Saladin 31957, *d.* Ladylove *by* Old Sort 24826.

832 II. (£5, & Special.[4])—CAPTAIN H. A. CHRISTY, Llangoed, Llyswen, Breconshire, for **Llangoed Captain**, born Jan. 26; *s.* Sailor 31009, *d.* Columbine (vol. 46, p. 387) *by* Eaton Bobs 21349.

835 III. (£3.)—HENRY R. EVANS, Court of Noke, Pembridge, for **Happy Morn**, born Jan. 3; *s.* Hunting Morn 31591, *d.* Belinda (vol. 44, p. 399) *by* Gilderoy 20853.

831 IV. (£2.)—GEORGE HENRY BRAY, Dormington Court, Hereford, for **Conquest**, born Feb. 1, bred by the late Viscount Rhondda, Llanwern; *s.* Conway 32396, *d.* Colleen (vol. 47, p. 971) *by* North Star 27752.

839 V. (£2.)—CAPTAIN R. T. HINCKES, Mansel Court, Mansel Lacy, Hereford, for **Mansel Liberator**, born Feb. 2; *s.* Starlight 28754, *d.* Laura 16th (vol. 46, p. 531) *by* Eaton Sovereign 26832.

849 R. N.—CHARLES HERBERT TINSLEY, Twyford, Pembridge, for **Bounds Investment**.
H. C.—830, 837, 841, 842, 844, 847. C.—828, 829, 845, 850.

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[1] £86 towards these Prizes were given by the Hereford Herd Book Society.

[2] Champion Prize of £10 10s. given by the Hereford Herd Book Society for the best Bull in Classes 131-135.

[3] Two Special District Prizes of £15 First Prize and £5 Second Prize given through the Hereford Herd Book Society for the best groups of three Hereford animals in Classes 131-140, the property of Exhibitors residing in Monmouthshire and Glamorganshire.

[4] Special District Prize of £10 given by a Member of the R.A.S.E. for the best Bull in Classes 131-135, the property of an Exhibitor residing in Wales or Monmouthshire.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 134.—*Hereford Bulls, calved in* 1918, *on or after March* 1. [17 entries.]

868 I. (£10.)—H. WESTON & SONS, The Bounds, Much Marcle, Herefordshire, for **Bounds Improver**, born March 22; *s.* Bounds Glencross 33400, *d.* Princess (vol. 45, p. 371) *by* Sailor Prince 26465.

857 II. (£5.)—HENRY J. DENT, Perton Court, Stoke Edith, Herefordshire, for **Perton Ambitious**, born March 17; *s.* Eaton Silver 29693, *d.* Pink Rose 8th (vol. 49, p. 462) *by* Time Test 26529.

852 III. (£3.)—H.M. THE KING, Royal Farms, Windsor, for **Windsor Perfection**, born April 12; *s.* Paymaster 32892, *d.* Purity *by* Donald 26804.

858 IV. (£2)—CAPTAIN R. T. HINCKES, Mansel Court, Mansel Lacy, Hereford, for **Mansel Hector**, born March 1; *s.* Turgot 33413, *d.* Dame Hilda (vol. 48, p. 678) *by* Eaton Pearl 26830.

859 R. N.—MRS. ELLEN MEDLICOTT, Court Farm, Bodenham, Herefordshire, for **Bodenham Grove.**
H. C.—863, 865, 866.

Class 135—*Hereford Bulls* (*Novice*) *calved in* 1918. [15 entries.]

876 I. (£10.)—NEWMAN BROTHERS, Lower Wickton, Leominster for **Banker**, born April 15; *s.* Patchwork 34099, *d.* Blackbrook Pansy (vol. 44, p. 683) *by* Blackbrook Dodger 25151.

882 II. (£5, & R. N. for Special.[1])—OWEN WILLIAMS, Crossways, Cowbridge, for **Bounteous**, born Feb. 2, bred by the late Lord Rhondda, Llanwern Park, Newport, Mon; *s.* Sir Sam 33131, *d.* Bountiful (vol. 46, p. 372) *by* Charity 28990.

879 III. (£3.)—JOHN WALKER, Knightwick Manor, Worcester, for **Twyford Garnet**, born Feb. 1, bred by S. C. Hayter, Twyford, Pembridge; *s.* Ringer 31920, *d.* Dorothea (vol. 46, p. 594) *by* Xmas Gift 25882.

872 IV. (£2)—PERCY EDWARDS BRADSTOCK, Garford, Garkhill, Hereford, for **Signal**, born Feb. 5; *s.* Shelton Laird 34368 *d.* Rosette (vol. 51) *by* Perton General 24864.

874 R. N.—R. B MARSH, Broome House, Aston-on-Clun, for **Broome Favourite.**
H. C.—873, 877.

Class 136.—*Hereford Cows* (*in-milk*), *calved in or before* 1915. [9 entries.]

884 I. (£10.)—WALTER HARRY DEPPER, Dean Park, Tenbury Wells, for **Lady John 8th** (vol. 44, p. 849), born Jan. 18, calved April 18, 1919, bred by the late Alfred Tanner, Shrawardine, Shrewsbury; *s.* Shraden Wizard 28718, *d.* Lady John 7th (vol. 41, p. 765) *by* Major Domo 20179.

890 II. (£5, & R. N. for Special.[2])—OWEN WILLIAMS, Crossways, Cowbridge, for **Snowbird** (vol. 48, p. 974), born Jan. 5, 1909, calved Jan. 31, 1919, bred by A. P. Turner, The Leen, Pembridge, Herefordshire; *s.* Lord Lieutenant 22323, *d.* Snowdrop 5th (vol. 36, p. 659) *by* Perthshire 20919.

887 III. (£3.)—EDWARD CRAIG TANNER, Eyton-on-Severn, Shrewsbury, for **Dorothy 3rd** (vol. 45, p. 963), born Dec. 11, 1910, calved March 15, 1919, bred by the late Alfred Tanner, Shrawardine, Shrewsbury; *s.* Commandant 22040, *d.* Dorothy *by* Royalist 3rd 16958.

885 R. N.—CAPT. R. T. HINCKES, Mansel Court, Mansel Lacy, Hereford, for **Christina.**
H. C.—886, 888 C. 891.

888, 890 and 891 (Special II.[3])—OWEN WILLIAMS, for **Christabel Pankhurst, Snowbird, and Sheepcote Opal.**

Class 137.—*Hereford Heifers* (*in-milk*), *calved in* 1916. [3 entries.]

893 I. (£10.)—JOHN TUDGE, Duxmoor, Craven Arms, for **Dorothy**, born April 12, calved Dec. 8, 1918; *s.* Claret Cup 30427, *d.* Mistress Jean (vol. 48, p. 1055) *by* Jacob 11th 22937.

894 II. (£5.)—JOHN TUDGE, for **Rosebud**, born July 2, calved Jan. 4, 1919; *s.* Claret Cup, *d.* Daisy 2nd (vol. 48, p. 1055) *by* Damascus 2nd 16784.

895 III. (£3.)—OWEN WILLIAMS, Crossways, Cowbridge, for **Dower** (vol. 48, p. 989), born May 5, calved Jan. 21, 1919, bred by the late Lord Rhondda, Llanwern Park, Newport, Mon.; *s* Father Christmas 30557, *d.* Dowager 27th (vol. 45, p. 960) *by* Commandant 22040.

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[1] Special District Prize of £10 given by a Member of the R.A.S.E. for the best Bull in Classes 131-135, the property of an Exhibitor residing in Wales or Monmouthshire.

[2] Special District Prize of £10 given by a Member of the R.A.S.E. for the best Cow or Heifer in Classes 136-140, the property of an Exhibitor residing in Monmouthshire or Glamorganshire.

[3] Two Special District Prizes of £15 First Prize and £5 Second Prize given through the Hereford Herd Book Society for the best groups of three Hereford animals in Classes 131-140, the property of Exhibitors residing in Monmouthshire and Glamorganshire.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor".]

Class 138.—*Hereford Heifers, calved in* 1917. [5 entries.]

900 I. (£10, & R. N. for Champion.[1])—EDWARD CRAIG TANNER, Eyton-on-Severn, Shrewsbury, for **Sunbeam 2nd** (vol. 49, p. 856), born Jan. 18; *s.* Jimmy Reid 30688, *d.* Brompton Lily 3rd *by* Eaton Sensation 24566.

898 II. (£5.)—FRANK BIBBY, Hardwicke Grange, Shrewsbury, for **Clive Coquette 4th** (vol. 49, p. 362), born April 6; *s.* Shucknall Prince 33124, *d.* Clive Countess 4th (vol. 46, p. 322) *by* Chancellor 24477.

899 III. (£3.)—GEORGE H. DRUMMOND, Swaylands, Penshurst, Kent, for **Trinket** (vol. 49, p. 557), born March 3, bred by S. C. Hayter, Twyford, Herefordshire; *s.* Xmas Gift 25882, *d.* Truelove (vol. 48, p. 659) *by* Eaton Don 27511.

897 R. N.—FRANK BIBBY, for **Clive Purity 7th.**
C.—896.

Class 139.—*Hereford Heifers, calved in* 1918. [9 entries.]

901 I. (£10, & Champion.[1])—FRANK BIBBY, Hardwicke Grange, Shrewsbury, for **Clive Succour**, born Jan 20; *s.* Shucknall Prince 33124, *d.* Olive Purity 5th (vol. 46, p. 323) *by* Crusader 26038.

904 II. (£5.)—CAPT. E. L. A. HEYGATE, Buckland, Leominster, for **Merry Maiden**, born Jan 13; *s.* Merry Lad 34003, *d.* Mermaid 7th (vol. 42, p. 761) *by* Waverley 25862.

905 III. (£3.)—CAPT. R. T. HINCKES, Mansel Court, Mansel Lacy, Hereford, for **Mansel Bertha 2nd**, born April 28; *s.* Starlight 28754, *d.* Bertha (vol. 45, p. 616) *by* Eaton Pearl 26830.

902 R. N.—W. H. DONNE DAVIES, The Pigeon House, Weston Beggard, Hereford, for **Miss Miriam.**
H. C.—903. C.—909.

Class 140.—*Hereford Heifers (Novice), calved in* 1918. [9 entries.]

916 I. (£10, & Special.[2])—ALBERT WALTER TROTMAN, Langston Court, Newport, Mon., for **Rarity**, born Jan. 26, bred by the late Viscount Rhondda, Llanwern Park, Newport, Mon.; *s.* Sir Sam 33131, *d.* Rosalind (vol. 43, p. 764) *by* Golden Plume 24633.

913 II. (£5.)—W. J. PITT, The Albynes, Bridgnorth, for **Albynes Beauty**, born March 9; *s.* Rounds Chance 29544, *d.* Elegance (vol. 48, p. 899) *by* Lowland Paradigm 26986.

912 III. (£3.)—J. K. HYSLOP, Ivington, Leominster, for **Ivington Empress**, born Jan. 9; *s.* Ivington Sailor 29353, *d.* Ivington Lassie (vol. 46, p. 636) *by* Ivington Admiral 29810.

914 R. N.—JOHN SMITH, Greenway, Brecon, for **Lemco.**
C.—915.

Devons.[3]

Class 141.—*Devon Bulls, calved in* 1914, 1915, 1916 *or* 1917. [5 entries.]

919 I. (£10, & Champion.[4])—H.M. THE KING, Royal Farms, Windsor, for **Windsor Famous 9522**, born Jan. 27, 1916; *s.* Windsor Captain 8325, *d.* Cothelstone Falacy 24294 *by* Macaroon 5856.

923 II. (£5)—CHARLES MORRIS, Highfield Hall, St. Albans, for **Highfield Majestic 8696**, born June 15, 1917; *s.* Highfield General 2nd 8920, *d.* Overton Snowdrop 5th 22109 *by* Overton Ringleader 5612.

920 III. (£3.)—JOHN H CHICK, Wynford Eagle, Dorchester, for **Tumbler Secundus 9490**, born March 9, 1916, bred by Robert Cook, Crazelowman, Tiverton; *s.* Mower's Jaffre 8610, *d.* Fowler's Jill 24972 *by* Capton Duke 4540.

921 R. N.—CHARLES MORRIS, for **Bryanston Masterpiece.**

Class 142.—*Devon Bulls, calved in* 1918. [5 entries.]

925 I. (£10, and R.N. for Champion.[4])—CHARLES MORRIS, Highfield Hall, St. Albans, for **Heatherton Pilot**, born Feb. 20, bred by J. A. & M. A. Beedell, Heatherton, Bradford Taunton; *s.* Gotton Prince 6th 9301, *d.* Heatherton Gentle 49th 28064 *by* Durston Pilot 6699.

927 II. (£5.)—SIR GILBERT WILLS, M.P., The Kennels, Dulverton, for **Pound Herdsman**, born Jan. 5, bred by Mrs. A. C. Skinner & Son, Pound Farm, Bishops Lydeard; *s.* Cowman 8422, *d.* Pound Handsome 5th 25362 *by* Pound Gladiator 6169.

926 III. (£3.)—CHARLES MORRIS, for **Highfield Victor**, born Jan. 6; *s.* Highfield Reminder 8539, *d.* Highfield Countess 3rd 26058 *by* Pound Lord Brassy 5th 5622.

926A R. N.—MRS. A. C. SKINNER & SON, Pound, Bishops Lydeard, Somerset, for **Pound Larker.**

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[1] Champion Prize of £10 10*s.* given by the Hereford Herd Book Society for the best Cow or Heifer in Classes 136-140.

[2] Special District Prize of £10 given by a Member of the R.A.S.E. for the best Cow or Heifer in Classes 136-140, the property of an Exhibitor residing in Monmouthshire or Glamorganshire.

[3] £40 towards these Prizes were given by the Devon Cattle Breeders' Society.

[4] Champion Prize of £10 10*s.* given by the Devon Cattle Breeders' Society for the best Bull in Classes 141 and 142, entered or eligible for entry in the Devon Herd Book.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 143.—*Devon Cows or Heifers (in-milk), calved in or before* 1916. [5 entries.]

932 I. (£10.)—SIR GILBERT WILLS, M.P., The Kennels, Dulverton, for **Northmoor Crocus** 28834, born March 16, 1914, calved Jan. 3, 1919; *s.* Northmoor Royal Standard, *d.* Nurthey Curly 13th.

929 II. (£5.) WILLIAM HEYWOOD, Whitefield Farm, Wiveliscombe, Somerset, for **Lovelinch Flirt** 24339, born June 28, 1910, calved Feb. 16, 1919; *s.* Waterloo 6236, *d.* Bearwood Flirt 19165 *by* Lord Petsworthy 4440.

930 III. (£3.)—EXORS. OF THE LATE H. KINGSFORD-LETHBRIDGE, Wood, South Tawton, Okehampton, for **Woodflower 2nd** 25183, born April 28, 1911, calved Nov. 24, 1918; *s.* Capton Royalman 5186, *d.* Wood Flower 22158 *by* Carones 5647.

931 R. N.—CHARLES MORRIS, Highfield Hall, St. Albans, for **Mayoress.**
C.—928.

Class 144.—*Devon Dairy Cows or Heifers (in-milk), calved in or before* 1916. [7 entries.]

935 I. (£10.)—W. G. BUSK, Wraxall Manor, Dorchester, for **Wynford Baby 3rd** C 245 born May 1, 1911, calved May 17, 1919, bred by J H Chick, Wynford Eagle, Dorchester; *s.* Charmer 6642 *d.* Wynford Baby 1st *by* Overton Eclipse 5078.

933 II. (£5.)—W. G. BUSK, for **Suffragette 1st** 26561, born Feb. 1, 1913, calved May 25, 1919, bred by R. A. Clarke, Chiselborough, Stoke-under-Ham, Somerset; *s.* Rainbow Goodman 6888, *d.* Suffragette *by* Durston Taleteller 5764.

938 III. (£3.)—JOHN H. CHICK, Wynford Eagle, Dorchester, for **Wynford Spark** C 477, born Sept. 4, 1916, calved April 30, 1919; *s.* Crazelowman Admiral 8423, *d.* Wynford Spark 1st B 357 *by* Charmer 6642.

Class 145.—*Devon Heifers, calved in* 1917. [4 entries.]

941 I. (£10, & Champion.[1])—CHARLES MORRIS, Highfield Hall, St. Albans, for **Highfield China Cup 9th** 30343, born Jan. 16; *s.* Highfield General 8105, *d.* Highfield China Cup 6th 26917 *by* Captain Bellringer 4911.

941A II. (£5, & R. N. for Champion.[1])—MRS. A C. SKINNER & SON, Pound, Bishops Lydeard, Somerset, for **Pound Handsome 9th** 30489, born Feb. 11; *s.* Dairyman 7040, *d.* Pound Handsome 4th 24635 *by* Pound Forager 6502.

940A III. (£3.)—H. GILLHAM, Long Run, Bishops Hull, Taunton, for **Taunton Lady** 30049, red, born Jan. 2; *s.* Taunton Boy 9082, *d.* Lady Escott 7th 25340 *by* Fennington Gent 5777

940 R. N.—W. G. BRENT, Warrens Park, Coads Green, Launceston, for **Warrens Park Primrose.**

Class 146.—*Devon Heifers, calved in* 1918. [3 entries.]

942 I. (£10.)—CHARLES MORRIS, Highfield Hall, St. Albans, for **Highfield Primrose 2nd**, born Jan. 29; *s.* Highfield Reminder 8539, *d.* Primrose 4th C 175 *by* Butcher Bird 5984.

943A II. (£5.)—MRS. A C. SKINNER & SON, Pound, Bishops Lydeard, Somerset, for **Pound Laurel 4th**, born Jan. 4; *s.* Dairyman 7040. *d.* Pound Laurel 27070 *by* Lark, Curly Coat 6433.

943 III. (£3.)—A. POPE, Henstill, Sandford Crediton, for **Sandford Curly 8th**, born Jan. 18; *s.* Barum Duke 8355, *d.* Sandford Curly 20888 *by* Bickham Boy 3rd 4531.

South Devons.[2]

Class 147.—*South Devon Bulls, calved in or before* 1917. [3 entries.]

944 I. (£10, & Champion.[3])—W. T. HENDY & SON, Carsewell, Holbeton, Plymouth, for **Worswell Perfection** 6330, born June 8, 1915, bred by R. & H. Chaffe, Worswell Barton, Revelstoke, Plymouth; *s.* Pamflete Dairyman 4509, *d.* Worswell Princess 11384.

946 II. (£5.) J. SPARROW WROTH & SONS, Coombe, Aveton Gifford, South Devon, for **Widland Perfection** 5217, born July 24, 1913, bred by Camp & Sons, Widland, Modbury; *s.* Leg Marquis 2941, *d.* Widland Sunbeam 3rd 7606 *by* Happy Harry 2632.

Class 148.—*South Devon Bulls, calved in* 1918. [2 entries.]

947 I. (£10.)—HENRY J. KINGWELL, Bow Grange, Totnes, Devon, for **Bow Well Bred**, born March 23, bred by Mr. Harris, Well, Stoke Gabriel; *s.* Tidwell Champion 6229, *d.* Pretty Face 5th 10002 *by* Golden Fancy 2894.

947A II. (£5.)—F. VIGGERS & SONS, Woodford, Plympton, South Devon, for **Trenant Right Sort**, light red, born April 10, bred by W. F. Sobey, Trenant, Liskeard: *s.* Happy Boy 5953, *d.* Dora 3rd 14562 *by* Spriddlescombe Hard Luck 4194.

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[1] Champion Prize of £10 10*s.* given by the Devon Cattle Breeders' Society for the best Cow or Heifer in Classes 143-146, entered or eligible for entry in the Devon Herd Book.

[2] £20 towards these Prizes were given by the South Devon Herd Book Society.

[3] Silver Challenge Cup, value £20, given through the South Devon Herd Book Society, for the best Animal in Classes 147-151.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 149.—*South Devon Cows or Heifers (in-milk), calved in or before* 1916. [6 entries.]

952 **I. (£10, & R. N. for Champion.[1])**—H. WHITLEY, Primley, Paignton, South Devon, for **Worswell Gladys 2nd** 11380, born Jan. 12, 1912, calved Oct. 21, 1918, bred by N. S. Chaffe & Sons, Worswell Barton, Revelstoke, Plymouth; *s.* Masher's Duke 2679, *d.* Gladys 5408 *by* Juryman 1165.

948 **II. (£5.)** RICHARD & HENRY CHAFFE, Worswell Barton, Revelstoke, Plymouth, for **Worswell Phillis** 13667, born Nov. 29, 1914, calved Nov. 11, 1918; *s.* Pamflete Dairyman 4509, *d.* Worswell Primrose Girl 11383 *by* Peter the Piper 3842.

949 **III. (£3.)**—COL. THE RT. HON. F. B. MILDMAY, M.P., Flete, Ivybridge, Devon, for **Lily 7th** 15591, born Jan. 27, 1915, calved Jan. 13, 1919; *s.* Bickham Beauty 4280, *d.* Lily 4th 11826 *by* The King 1383.

950 **R. N.**—COL. THE RT HON. F. B. MILDMAY, M.P., for **Primrose 2nd.**

Class 150.—*South Devon Heifers, calved in* 1917. [7 entries.]

958 **I. (£10.)**—COL. THE RT. HON. F. B. MILDMAY, M.P., Flete, Ivybridge, for **Lily 8th** 18524, born Jan. 31: *s* Lilian's Champion 6016, *d.* Lily 5th 12962 *by* Bulleigh Prince 3109.

959 **II. (£5.)**—COL. THE RT. HON. F. B. MILDMAY, M.P., for **Lily 9th** 18525, born May 8; *s.* Lilian's Champion 6016, *d.* Lily 4th 11826 *by* The King 1383.

960 **III. (£3.)**—J. SPARROW WROTH & SONS, Coombe, Aveton Gifford, for **Favourite 8th** 19261, born March 22; *s.* Widland Perfection 5217, *d.* Favourite 6th 6306 *by* Duke of York 1439

957 **R. N.**—JOHN LUSCOMBE, Wonwell Court, Kington, Kingsbridge, South Devon, for **Crecus 6th.**

Class 151.—*South Devon Heifers, calved in* 1918. [4 entries.]

963 **I. (£10.)**—J. SPARROW WROTH & SONS, Coombe, Aveton Gifford, South Devon, for **May 3rd**, born Jan. 10; *s.* Widland Perfection 5217, *d.* May 6883 *by* Masher 769.

964 **II. (£5.)**—J. SPARROW WROTH & SONS, for **Snowball**, born Feb. 8; *s.* Widland Perfection 5217, *d.* Sylvia 3rd 14877 *by* Saltrane 1220.

962 **III. £3.)**—HENRY J. KINGWELL, Bow Grange, Totnes, for **Bow Grange Fancy 2nd** born Aug. 8; *s.* Yellow Boy 6915, *d.* Kingwell's Fancy 12798 *by* Defiance 3135.

961 **R. N.**—HENRY J. KINGWELL, for **Bow Grange Duchess.**

Longhorns.[2]

Class 152.—*Longhorn Bulls, calved in* 1914, 1915, 1916 *or* 1917. [3 entries.]

967 **I. (£10, & Champion.[3])**—J. W. SWINNERTON-WESTON, Over Whitacre House, near Birmingham, for **Whitacre Venture 2nd** 754, brindle and white, born June 12, 1915; *s.* April Fool 634, *d.* Stivichall Doreen (vol. 9, p. 63) *by* Susan's Son 515.

965 **II. (£5.)**—CAPT. C. W. COTTRELL-DORMER, Rousham, Steeple Aston, Oxon., for **Rousham Rambler** 743, dark brindle and white, born Feb. 6, 1915; *s.* Rousham Rufus 700, *d.* Arden Pansy 4th (vol. 5, p. 14), *by* Young Bow Horn 438.

966 **III. (£3.)**—J. L. & A. RILEY, Putley, Ledbury, Herefordshire, for **Croft Captain** 730, dark brindle and white, born June 24, 1915, bred by W. Hanson Sale, Arden Hill, Atherstone; *s.* Pembridge Rocket 683, *d.* Arden Lady Panga 3rd (vol. 9, p. 55) *by* Arden Rover 574.

Class 153.—*Longhorn Bulls, calved in* 1918. [2 entries.]

969 **I. (£10, & R. N. for Champion[4])**—J. W. SWINNERTON-WESTON, Over Whitacre House, near Birmingham, for **Whitacre Angelus** 795, brindle and white, born Feb. 10; *s.* Whitacre Venture 2nd 754, *d.* Angelina 13th (vol. 9, p. 28) *by* Laveno 2nd 592.

968 **II. (£5.)**—HENRY B. PARSONS, The Manor House, Eastwell Park, Ashford, Kent, for **Prince Diadem of Kent** 778, red, brindle and white, born Feb. 23; *s.* Eastwell Examiner 734, *d.* Princess Dido (vol. 10, p. 13) *by* Eastwell Eagle 500.

Class 154.—*Longhorn Cows or Heifers (in-milk), calved in or before* 1916. [6 entries.]

972 **I. (£10, & R. N. for Champion.[3])**—HENRY B. PARSONS, The Manor House, Eastwell Park, Ashford, Kent, for **Envy of Eastwell** (vol. 7, p. 16), red, brindle and white, born May 12, 1908, calved May 25, 1919, bred by Lord Gerard, Eastwell Park, Ashford, Kent; *s.* Melcombe Emperor 416, *d.* Bentley Dido (vol. 5, p. 16) *by* Bentley Wonder 373.

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[1] Silver Challenge Cup, value £20, given through the South Devon Herd Book Society, for the best Animal in Classes 147-151.

[2] £20 towards these Prizes were given by the Longhorn Cattle Society.

[3] Perpetual Silver Challenge Cup, value £15, given by the Longhorn Cattle Society for the best Bull or Cow in Classes 152 and 154.

[4] Silver Challenge Cup, value £15, given through the Longhorn Cattle Society for the best Bull or Heifer in Classes 153 and 155.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

975 II. (£5.)—J. W. SWINNERTON-WESTON, Over Whitacre House, Birmingham, for **Angelina 16th** (vol. 9 p. 29), red and white, born Dec. 4, 1913, calved April 24, 1919, bred by the Hon. E. A. Fitzroy, M.P., West Haddon, Rugby; *s.* Shipston 706, *d.* Angeline 11th (vol. 8, p. 23) *by* Eastwell Eric 532.

970 III. (£3.)—CAPT. C. W. COTTRELL-DORMER, Rousham Steeple Aston, Oxfordshire, for **Lorna**, red, brindle and white, born Jan. 13, 1911, calved April 30, 1919, bred by F. J. Mayo, Friar Waddon, Dorchester; *s.* Marky's Courtier 508, *d.* Waddon Lovely (vol. 5, p. 32) *by* Pretender 3rd 391.

971 R. N.—HENRY B. PARSONS, for **Easter of Eastwell.**

H. C.—974. C.—973.

Class 155.—*Longhorn Heifers, calved in* 1917 *or* 1918. [4 entries.]

979 I. (£10, & Champion.[1])—W. E. SWINNERTON, Manor House, Over Whitacre, Birmingham, for **Stivichall Doreen 3rd** (vol. 9, p. 24), brindle and white, born May 2, 1917; *s.* April Fool 634, *d.* Stivichall Doreen 2nd (vol. 9, p. 63) *by* Eastwell Exact 733.

977 II. (£5.)—HENRY B. PARSONS, The Manor House, Eastwell Park, Ashford, Kent, for **Princess of Kent** (vol. 11, p. 13), red, brindle and white, born April 21, 1917, bred by Lord Gerard, Eastwell Park, Ashford, Kent; *s.* Eastwell Eveno 664, *d.* Marley's Princess (vol. 8, p. 33), *by* Waddon Marmion 518.

976 (£3.)—HENRY B. PARSONS, for **Lady Pansy of Kent** (vol. 11, p. 26), brindle and white, born March 12, 1917, bred by Mrs. Tingey, Dersingham, King's Lynn; *s.* Admiral 632, *d.* Pansy of Dersingham (vol. 9, p. 67) *by* Quintin 614.

978 R.N.—J. L. & A. RILEY, Putley, Ledbury, for **Putley Dianthus 2nd.**

Sussex.[2]

Class 156.—*Sussex Bulls, calved in* 1914, 1915, 1916, *or* 1917. [4 entries.]

982 I. (£10, & Champion.[3])—JAMES GROVES, Brownings Manor, Blackboys, Sussex, for **Lynwick Red Rover 3811**, born June 15, 1915, bred by John Aungier, Lynwick, Rudgwick, Sussex; *s.* Drungewick R.O. 3rd 2662, *d.* Lynwick Rock Cherry 12772 *by* Lynwick Headley 2412.

981 II. (£5.)—OSMOND ELIAS D'AVIGDOR GOLDSMID, Park Farm, Somerhill, Tonbridge, for **Hadrian**, born May 31, 1917; *s.* Tutsham Nero 2nd 3526, *d.* Somerhill Lovely 11830 *by* Bewbush Count 2178.

980 III. (£3.)—J. RAYNER BETTS, Greenhill, Otham, Maidstone, for **Birling Delight 3731**, born March 12, 1914, bred by the late Hon. R. P. Nevill, Birling Manor, Maidstone; *s.* Fairy's Firelight 2674, *d.* Lavington Fawn 13503 *by* Shillinglee Gold 2nd 2194.

983 R. N.—ALFRED PALMER, West Park, Horne, Surrey, for **West Park Noble Lord.**

Class 157.—*Sussex Bulls, calved in* 1918. [6 entries.]

989 I. (£10, & R. N. for Champion.[3])—W. A. THORNTON, Lock, Partridge Green, Sussex, for **Lock Bean 6th**, born May 13; *s.* Birling Geoffrey 2nd 4252, *d.* Hetty 6th of Lock 12693 *by* Tutsham Toreador 2016.

985 II. (£5.)—JAMES GROVES, Brownings Manor, Blackboys, Sussex, for **Brownings Prince 7th** (vol. 34), born March 20; *s.* Prince of Ticehurst 5th 3890, *d.* Brownings Bloom [illegible] 15581 *by* Lock Miller [illegible] 2994.

986 III. (£3.)—JAMES GROVES, for **Brownings Miller 27th** (vol. 34), born Jan. 18; *s.* Brownings Miller 6th 3883, *d.* Brownings Crystal 1st 16280 *by* Apsley Albert 2nd 20706.

984 R. N.—OSMOND ELIAS D'AVIGDOR GOLDSMID, Park Farm, Somerhill, Tonbridge, for **Somerhill Stoker.**

Class 158.—*Sussex Cows or Heifers (in-milk), calved in or before* 1916. [4 entries.]

993 I. (£10, & Champion.[4])—CAMPBELL NEWINGTON, Oakover, Ticehurst, Sussex, for **Oakover Stonesdown 8th 15879**, born Feb. 18, 1914, calved Jan. 13, 1919; *s.* Oakover Gold 2nd 2970, *d.* Stonesdown [illegible] 8342 *by* Headley of Horsham 1571.

992 II. (£5.)—JAMES GROVES, Brownings Manor, Blackboys, Sussex, for **Brownings Stonesdown 1st 16290**, born April 12, 1915, calved Feb. 25, 1919; *s.* The Beau 2548, *d.* Tutsham Stonesdown 6th 13967 *by* Tutsham Beagle 2899.

990 III. (£3.)—G. R. BONNETT, Old House, West Hoathly, Sussex, for **Drungewick Pet 9th 16715**, born April 21, 1916, calved Feb. 18, 1919, bred by Ernest E. Braby, Drungewick Manor House, Rudgwick, Sussex; *s.* Drungewick Marksman 3rd 3274, *d.* Drungewick Pet 3rd 12846 *by* Lord of Drungewick 5th 2038.

991 R. N.—OSMOND ELIAS D'AVIGDOR GOLDSMID, Park Farm, Somerhill, Tonbridge, for **Somerhill Brond 3rd.**

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[1] Silver Challenge Cup, value £15, given through the Longhorn Cattle Society for the best Bull or Heifer in Classes 153 and 155.

[2] £20 towards these Prizes were given by the Sussex Herd Book Society.

[3] Champion Silver Medal given by the Sussex Herd Book Society for the best Bull in Classes 156 and 157.

[4] Champion Silver Medal given by the Sussex Herd Book Society for the best Cow or Heifer in Classes 158-160.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 159.—*Sussex Heifers, calved in* 1917. [3 entries.]

994 **I. (£10, & R. N. for Champion.[1])**—OSMOND ELIAS D'AVIGDOR GOLDSMID, Park Farm, Somerhill, Tonbridge, for **Somerhill Loveless 17th**, born Feb. 21; *s.* Tutsham Nero 2nd 3526, *d.* Tutsham Stonesdown 3rd 12704 *by* Tutsham Gold 1946.

996 **II. (£5.)**—W. A. THORNTON, Lock, Partridge Green, Sussex, for **Lock Darkey 21st**, 17765, born Jan. 10; *s.* Birling Geoffrey 2nd 4252, *d.* Lock Darkey 10th 15299 *by* Prince of Lock 2nd 2499.

995 **III. (£3.)**—CAMPBELL NEWINGTON, Oakover, Ticehurst, Sussex, for **Oakover Butterfly** 17616, born Jan. 10; *s.* Ironside 3411, *d.* Oakover Buxom Maid 15156 *by* Hildas Briar 2650.

Class 160.—*Sussex Heifers, calved in* 1918. [4 entries.]

998 **I. (£10.)**—CAMPBELL NEWINGTON, Oakover, Ticehurst, Sussex, for **Oakover Stonesdown 15th**, born Jan. 25; *s.* Ironside 3411, *d.* Oakover Stonesdown 13th 16484 *by* Oakover Gold 2970.

997 **II. (£5.)**—OSMOND ELIAS D'AVIGDOR GOLDSMID, Park Farm, Somerhill, Tonbridge, for **Somerhill Loveless 18th**, born Feb. 5; *s.* Tutsham Nero 2nd 3526 *d.* Somerhill Loveless 12th 10265 *by* Tutsham James 2724.

999 **III. (£3.)**—ALFRED PALMER, West Park, Horne, Surrey, for **Bounty**, born March 22, bred by Joseph Godman, Park Hatch, Godalming, Surrey; *s.* Lock Rufus 3995, *d.* Bonfire 49th 15549 *by* Shillinglee Gold 8th 2549.

1000 **R. N.**—ALFRED PALMER, for **West Park Noble Lady 2nd.**

Welsh.[2]

Class 161.—*Welsh Bulls, calved on or between December* 1, 1913, *and November* 30, 1916. [5 entries.]

1002 **I. (£10, & Champion.[3])**—R. M. GREAVES, Wern, Portmadoc, for **Snowden Idwal 1192**, born August 8, 1916, bred by University College of N. Wales, Aber, Bangor; *s.* Snowdon Arran 903, *d.* Hendre Graceful D4 1263 *by* Duke of Bodowyn 375.

1005 **II. (£5, & R. N. for Champion.[3])**—CAPT J. C. WYNNE-FINCH, Voelas, Bettws-y-coed, for **Stamp of Penrhyn 1132**, born Feb. 8, 1916, bred by Lord Penrhyn, Penryhn Castle, Bangor; *s.* Nanhoron Model 608, *d.* Madryn Gally 596 *by* Black Bear 390 N. W.

1004 **III. (£3.)**—O. PARRY JONES, Plas Llechylched, Bryngwran, Anglesey, for **Foel Samson 1242**, born August 3, 1916, bred by Morris Williams, Foel Farm, Brynsiencyn, Anglesey; *s.* Bodrida Lion 1209, *d.* Marion Blackham 2nd 2475 *by* Marion Baronet 536.

1001 **R. N.**—E. & R. DAWES, Lammaston, Lamphey, Pembroke, for **Lammaston Marquis.**

H. C.—1003.

Class 162.—*Welsh Bulls, calved on or between December* 1, 1916, *and November* 30, 1917. [5 entries.]

1007 **I. (£10.)**—LORD PENRHYN, Penrhyn Castle, Bangor, for **Gunner of Penrhyn 1141**, born Feb. 20, 1917; *s.* Nanhoron Model 608, *d.* Geilian 2D 872 *by* Berw B 155.

1010 **II. (£5.)**—LORD SHEFFIELD, Penrhos, Holyhead, for **Penrhos Caradog 1187**, born Dec. 11, 1916; *s.* Nanhoron President 604, *d.* Budding 4th 1475 *by* Penmynydd Caradog 378.

1009 **III. (£3.)**—W. A. PRYTHERCH, Bodfiddan, Tycroes, for **Madryn Jester 1140**, born April 25, 1917, bred by Major E. J. W. Platt, Madryn, Aber, N. W.; *s.* Jack Johnson 799, *d.* Madryn Jane 2320 *by* Madryn Togo 491.

1006 **R. N.**—JOHN WILLIAM HOLLAND, Punt-y-Gwair, Llanengan, for **Bodelwa Glyndwr.**

H. C.—1008.

Class 163.—*Welsh Bulls, calved on or between December* 1, 1917, *and November* 30, 1918. [5 entries.]

1013 **I. (£10.)**—C. H. LLOYD EDWARDS, Nanhoron, Pwllheli, for **Carmel Jim**, born Feb. 7, 1918, bred by C. G. Owen, Ty Croes, Carmel; *s.* Glynllifon Captain 996, *d.* Cadi 8th 2490.

1012 **II. (£5.)**—O. PARRY JONES, Plas Llechylched, Bryngwran, Anglesey, for **Earl Newydd**, born Feb. 21, 1918, bred by Hon. F. G. Wynn, Glynllifon Park, Carnarvonshire; *s.* Glyn Togo 934, *d.* Lady Newydd B 2503 *by* Ap Mallard 528.

1014 **III. (£3.)**—LORD PENRHYN, Penrhyn Castle, Bangor, for **Dandy of Penrhyn**, born Dec. 19, 1917; *s.* Ensign of Penrhyn 849, *d.* Dorothy of Penrhyn 1412 *by* Plas Tudor 253.

1011 **R. N.**—R. M. GREAVES, Wern, Portmadoc, for **Wern Rocket.**

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[1] Champion Silver Medal given by the Sussex Herd Book Society for the best Cow or Heifer in Classes 158-160.

[2] £50 towards these Prizes were given by the Welsh Black Cattle Society.

[3] Champion Prize of £5 5s. given for the best Bull in Classes 161-163.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 164.—*Welsh Cows (in-milk), calved on or before November* 30, 1915. [1 entry.]

1016 I. (£10, & Champion.[1])—O. PARRY JONES, Plas Llechylched, Bryngwran, Anglesey, for **Plas Siani 1757**, born Dec. 3, 1912, calved Dec. 4, 1918; *s.* Plas Togo 249, *d.* Plas Sali 781 *by* Goldfinder 531.

Class 165.—*Welsh Heifers (in-milk), calved on or between December* 1, 1915, *and November* 30, 1916. [2 entries.]

1017 I. (£10.)—R. M. GREAVES, Wern, Portmadoc, for **Wern Opal**, born Dec. 15, 1915 calved Dec. 2, 1918; *s.* Wern Nonsuch 715, *d.* Wern Ladysmith 1653 *by* Wern Imp 443.

1018 II. (£5.)—LORD SHEFFIELD, Penrhos, Holyhead, for **Mona 3025**, born July 9, 1916, calved May 10, 1919; *s.* Nanhoron President 604, *d.* Budding 1147 *by* Monwyson 165.

Class 166.—*Welsh Heifers, calved on or between December* 1, 1916, *and November* 30, 1917. [7 entries.]

1019 I. (£10, & R. N. for Champion.[1])—R. M. GREAVES, Wern, Portmadoc, for **Wern Pear** 2597, born Dec. 5, 1916; *s.* Wern Nonsuch 715, *d.* Wern Iris 1285 *by* Duke of Wellington 294.

1024 II. (£5.)—LORD PENRHYN, Penrhyn Castle, Bangor, for **Rose 6th of Penrhyn**, born Dec. 12, 1916; *s.* Nanhoron Model 608, *d.* Bangor Rose 2nd 1504 *by* Madryn Mallord 298.

1020 III. (£3.)—O. PARRY JONES, Plas Llechylched, Bryngwran, Anglesey, for **Plas Mali** 2nd 2767, born March 26, 1917; *s.* David of Penrhyn 845, *d.* Plas Mali 1057 *by* Plas Carwr 248.

1021 R. N.—C. H. LLOYD EDWARDS, Nanhoron, Pwllheli, for **Nanhoron Duet.**

H. C.—1022, 1023, 1025.

Class 167.—*Welsh Heifers, calved on or between December* 1, 1917, *and February* 28, 1918. [1 entry.]

1026 I. (£10.)—LORD PENRHYN, Penrhyn Castle, Bangor, for **Nancy of Penrhyn**, born Jan. 22, 1918; *s.* Ensign of Penrhyn 849, *d.* Cwyfan Nancy 2nd 1794 *by* Plas Togo 249.

Class 168.—*Welsh Heifers, calved on or between March* 1, 1918, *and November* 30, 1918. [4 entries.]

1027 I. (£10.)—R. M. GREAVES, Wern, Portmadoc, for **Wern Rhianon**, born March 15; *s.* Bachellyn Glyndwr 1080. *d.* Wern Ideal 1280 *by* Duke of Wellington 294.

1028 II. (£5.)—O. PARRY JONES, Plas Llechylched, Bryngwran, Anglesey, for **Plas Enid 2nd**, born April 28: *s.* David of Penrhyn 845, *d.* Plas Enid 1756 *by* Plas Caradoc 475.

1029 III. (£3.)—LORD PENRHYN, Penrhyn Castle, Bangor, for **Gem of Penrhyn**, born March 2; *s* Ensign of Penrhyn 849, *d.* Gellian 2nd D 872 *by* Berw B155.

1028A R. N.—BENJAMIN B. MARSLAND, The Grange, Chadwick, Bromsgrove, for **Chadwick Connie.**

Red Polls.[2]

Class 169.—*Red Poll Bulls, calved in* 1914, 1915, *or* 1916. [2 entries.]

1031 I. (£10, & Champion.[3])—THOMAS BROWN & SON, Marham Hall, Downham Market, for **Marham Dauntless** 11031, born Jan. 23, 1916; *s.* Gay Davyson 10565, *d.* Davy 308th H1 20697, *by* Majiolini 3600.

1032 II. (£5.)—G. DUDLEY SMITH, Strensham Court, Worcester, for **Alarum** 10820, born May 11, 1915, bred by the Rt. Hon. Sir Ailwyn E. Fellowes, K.C.V.O., Honingham Hall, Norwich; *s.* Honingham Alcester 10424, *d.* Honingham Alma 23058 *by* Honingham Ammerdown 10035.

Class 170.—*Red Poll Bulls, calved in* 1917. [1 entry.]

1033 I. (£10.)—G. DUDLEY SMITH, Strensham Court, Worcester, for **Strensham Rupert** 11212, born May 7; *s.* Ashlyn Count 10125, *d.* Strensham Ruputa 23716 *by* St. Purple Emperor 10095.

Class 171.—*Red Poll Bulls, calved in* 1918. [9 entries.]

1035 I. (£10, & R. N. for Champion.[3])—H.M. THE KING, Sandringham, for **Royal Sunshine**, born Feb. 11; *s.* Letton Majiolini 10756, *d.* Honingham Ardenlia 2nd 24651 *by* Honingham Astrologie 10303

1041 II. (£5.)—THE MARCHIONESS OF GRAHAM, Easton Park, Wickham Market, for **Easton Laughing Fawn**, born March 8; *s.* Lysander 10610, *d.* Ashlyns Fawn 21969 *by* Ashlyns Major 9192.

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[1] Champion Prize of £5 5s. given for the best Cow or Heifer in Classes 164-168.

[2] £30 towards these Prizes were given by the Red Poll Cattle Society.

[3] Champion Prize of £5 given by the Red Poll Cattle Society for the best Bull in Classes 169-171.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

1039 III. (£3.)—THOMAS BROWN & SON, Marham Hall, Downham Market, for **Marham Panther**, born March 1; *s.* Kerrison Surprise 10880, *d.* Pansy P 1st 20473 *by* Fitzgerald 8956.

1034 **R. N.**—H. M. THE KING, for **Royal Farmer.**
H. C.—1038.

Class 172.—*Red Poll Cows or Heifers (in-milk), calved in or before* 1916. [15 entries.]

1043 **I.** (£10, & Champion.[1])—MAJOR D. G. ASTLEY, Little Plumstead Hall, Norwich, for **Plumstead Priceless** 25834, born Feb. 11, 1916, calved Jan. 10, 1919; *s.* Plumstead Pearl 10778, *d.* Plumstead Periwinkle 24772 *by* Acton Dairyman 9880.

1051 **II.** (£5 and R. N. for Champion.[1])—THE MARCHIONESS OF GRAHAM, Easton Park, Wickham Market, for **Charming Lass** 24484, born July 13 1914, calved April 12, 1919; *s.* Red David 10069, *d.* Charming Davy 12th 22036 *by* Starston Emperor 9335.

1050 **III.** (£3.)—J. B. DIMMOCK, Shotford Hall, Harleston, Norfolk, for **Shotford Lady Mary** 25872, born Sept. 9, 1915, calved Oct. 31, 1918; *s.* Shotford Alert 10488, *d.* Rendlesham Lady Mary 24786 *by* Longford Demoniac 10205.

1052 **R. N.**—THE MARCHIONESS OF GRAHAM, for **Lady Vanity.**
H. C.—1046.

Class 173.—*Red Poll Heifers, calved in* 1917. [10 entries.]

1061 **I.** (£10.)—THOMAS BROWN & SON, Marham Hall, Downham Market, for **Marham Amethyst B 12th** 26340, born Jan. 16; *s.* Marham Gay Lad 10895, *d.* Honingham Amberley 22142 *by* Acton Rocket 9764.

1058 **II.** (£5.)—H. M. THE KING, Sandringham, for **Royal Herdsman's Choice** 26453, born Jan. 21; *s.* Letton Majiolini 8th 10756, *d.* Honingham Ardentia 2nd 24651 *by* Honingham Astrologie 10303.

1064 **III.** (£3.)—THE MARCHIONESS OF GRAHAM, Easton Park, Wickham Market, for **Easton River Lys** 26151, born Jan. 28; *s.* Lysander 10610, *d.* Red River 21809 *by* Redskin 9623.

1066 **R. N.**—G. DUDLEY SMITH, Strensham Court, Worcester, for **Strensham Starch.**
H. C.—1062, 1063.

Class 174.—*Red Poll Heifers, calved in* 1918. [7 entries.]

1072 **I.** (£10.)—THOMAS BROWN & SON, Marham Hall, Downham Market, for **Marham Flurry**; *s.* Marham Dauntless 11031, *d.* Flutter 18046 *by* Wentworth 5257.

1071 **II.** (£5.)—THOMAS BROWN & SON, for **Marham Dainty**, born March 2; *s.* Marham Gay Lad 10895, *d.* Marham Daisy 25257 *by* Ashlyns Count 10125.

1069 **III.** (£3.)—MAJOR D. G. ASTLEY, Little Plumstead Hall, Norwich, for **Plumstead Pomegranate**, born Jan. 24; *s.* Plumstead Pearl 10778, *d.* Plumstead Proserpine 25303 *by* Battleaxe 10142.

1068 **R. N.**—MAJOR D. G. ASTLEY, for **Plumstead Pearmain.**

Aberdeen Angus.[2]

Class 175.—*Aberdeen Angus Bulls, calved on or between December* 1, 1913, *and November* 30, 1916. [3 entries.]

1077 **I.** (£10.)—CAPTAIN C. T. SCOTT, Buckland Manor, Broadway, Worcs., for **Proud George** 38595, born May 4, 1915, bred by Andrew T. Reid, Auchterarder House, Auchterarder; *s.* Romeo of Ballindalloch 29941, *d.* Proud Grace of Eshott 46552 *by* Grace of Ballindalloch 28100.

1076 **II.** (£5.)—JOHN JOSEPH CRIDLAN, Maisemore Park, Gloucester, for **Proud Idart of Maisemore** 38597, born March 10, 1915; *s.* Idart of Maisemore 33315, *d.* Tulip of Standen 45122 *by* Elector of Benton 21814.

1075 **III.** (£3.)—JOHN JOSEPH CRIDLAN, for **Prince Idyll of Maisemore** 42276, born July 20, 1916; *s.* Idyll of Maisemore 36219, *d.* Pride 7th of Maisemore 45186 *by* Everwise 24436.

Class 176.—*Aberdeen Angus Bulls, calved on or between December* 1, 1916, *and November* 30, 1917. [5 entries.]

1081 **I.** (£10, Champion[3] & Champion.[4])—CAPTAIN C. T. SCOTT, Buckland Manor, Broadway, Worcs., for **Etrurian of Bleaton** 41498, born Dec. 9, 1916, bred by J. M. Marshall, Bleaton, Blairgowrie; *s.* Baron Beauford 35480, *d.* Etruria of Bleaton 52860 *by* Emilio of Doonholm 31756.

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[1] Champion Prize of £5 given by the Red Poll Cattle Society for the best Cow or Heifer in Classes 172-174.

[2] £20 towards these Prizes were given by the Aberdeen Angus Cattle Society.

[3] Champion Gold Medal given by the Aberdeen Angus Cattle Society for the best animal in Classes 175-180.

[4] Champion Silver Medal given by the Argentine Aberdeen Angus Society for the best Animal in Classes 175-180.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

1078 II. (£5.)—SIR GEORGE COOPER, BT., Hursley Park, Winchester, for **Elector of Hursley** 41280, born Dec. 9, 1916; *s.* Polled Piper 38450, *d.* Elena of Hursley 50366 *by* Black for Ever of Ballindalloch 25338.

1082 III. (£3).—E. G. WHELER-GALTON, Claverdon Leys, Warwick, for **Lord Allan of Claverdon** 41902, born April 7, 1917; *s.* Darwin of Claverdon 37389, *d.* Black Ease 42178 *by* Edensor 23081.

1080 R. N.—A. W. MACONOCHIE, Cacketts, Cudham, Kent, for **Provost Marshal Petain.**

Class 177.—*Aberdeen Angus Bulls, calved on or between December* 1, 1917, *and November* 30, 1918. [11 entries.]

1086 I. (£10.)—JOHN JOSEPH CRIDLAN, Maisemore Park, Gloucester, for **Eric 2nd of Maisemore** 43525, born Dec. 11, 1917; *s.* Elegand of Tubberdaly 37578, *d.* Erica of Maisemore 52160 *by* Brave Briton of Maisemore 30218.

1085 II. (£5.)—J. H. BRIDGES, Langshott, Horley, Surrey, for **Earl of Surrey** 43238, born Dec. 1, 1917; *s.* Gath 39698, *d.* Ellaline of Langshott 50254 *by* Eland of Ballindalloch 24329.

1089 III. (£3.) — A. W. BAILEY HAWKINS, Stagenhoe Park, Welwyn, Herts., for **Excellence of Stagenhoe** 43676, born May 8, 1918; *s.* Mulben Elector 34889, *d.* Electa 2nd 51129 *by* Young Egmont 28859.

1092 R. N.—A. W. MACONOCHIE, Cacketts, Cudham, Kent, for **Black Hero of Horsted.**
H. C.—1088. C.—1087.

Class 178.—*Aberdeen Angus Cows or Heifers (in-milk), calved on or before November* 30, 1916. [7 entries.]

1095 I. (£10, R. N. for Champion[1], R. N. for Champion[2], & Champion.[3])—A. W. BAILEY HAWKINS, Stagenhoe Park, Welwyn, Herts., for **Ethinison of Advie** 58415, born Dec. 20, 1915, calved Jan. 14, 1919, bred by Peter Grant, Advie Mains, Advie, Morayshire; *s.* Prince Benison of Ballindalloch 36711, *d.* Etheldreda 40621 *by* Elobeid 21827.

1100 II. (£5 & R. N. for Champion.[3])—EDWARD A. WIGAN, Conholt Park, Andover, Hants, for **Tuberose of Conholt** 55475, born Dec. 16, 1913, calved April 1, 1919; *s.* Baron Breslau 30146, *d.* Tuberose of Standen 43477 *by* Elector of Benton 21814.

1094 III. (£3.)—JOHN JOSEPH CRIDLAN, Maisemore Park, Gloucester, for **Extra of Maisemore** 46864, born March 14, 1910, calved June 15, 1919; *s.* Proud Elf 24991, *d.* Exact of Preston 41673 *by* Publican of Preston 21178.

1098 R. N.—CAPT. C. T. SCOTT, Buckland Manor, Broadway, Worcs., for **Ida's Image.**
H. C.—1099.

Class 179.—*Aberdeen Angus Heifers, calved on or between December* 1, 1916, *and November* 30, 1917. [4 entries.]

1102 I. (£10.)—A. W. BAILEY HAWKINS, Stagenhoe Park, Welwyn, Herts., for **Proud Primrose** 61185, born Jan. 6, 1917, bred by the late Dr. Clement Stephenson, Sandyford Villa, Newcastle-on-Tyne; *s.* Prince of Jesters 32404, *d.* Primrose of Benton 49743 *by* Reviver 28675.

1103 II. (£5.)—E. G. WHELER-GALTON, Claverdon Leys, Warwick, for **Lady Margaret of Claverdon** 61387, born Dec. 11, 1916; *s.* Black Elm 37266, *d.* Black Eyes of the Temple 50568 *by* Prince of Rockliffe 28565.

1104 III. (£3.)—EDWARD A. WIGAN, Conholt Park, Andover, Hants., for **Lady Rose of Conholt** 61430, born Dec. 11, 1916; *s.* Earl Ebon of Ballindalloch 35751, *d.* Tuberose of Standen 43477 *by* Elector of Benton 21814.

1101 R. N.—J. H. BRIDGES, Langshott, Horley, Surrey, for **Patisserie.**

Class 180.—*Aberdeen Angus Heifers, calved on or between December* 1, 1917, *and November* 30, 1918. [11 entries.]

1107 I. (£10.)—J. H. BRIDGES, Langshott, Horley, Surrey, for **Jill of Preston 17th** 61770 born December 14, 1917, bred by the Rev. C. Bolden, Preston Bissett, Buckingham; *s.* Jacomo 39815, *d.* Jill of Preston 4th 50215 *by* Eloro 30415.

1109 II. (£5.)—JOHN JOSEPH CRIDLAN, Maisemore Park, Gloucester, for **Blackbird 12th of Maisemore** 62033, born December 3, 1917; *s.* Idyll of Maisemore 36219, *d.* Blackbird 3rd of Maisemore 41856 *by* Everwise 24436.

1111 III. (£3.)—A. W. BAILEY HAWKINS, Stagenhoe Park, Welwyn, Herts., for **Pride 5th of Stagenhoe** 62579, born Jan. 11, 1918; *s.* Mulben Elector 34889, *d.* Pride 3rd of Ruthven 49285 *by* Earl Echo of Ballindalloch 26706.

1105 R. N.—W. R. BOARD, Great Frampton, Llantwit Major, Cardiff, for **Esterel of Frampton 4th.**
H. C.—1108. C.—1110.

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[1] Champion Gold Medal given by the Aberdeen Angus Cattle Society for the best animal in Classes 175-180.

[2] Champion Silver Medal given by the Argentine Aberdeen Angus Society for the best Animal in Classes 175-180.

[3] Champion Gold Medal given by the English Aberdeen Angus Cattle Association for the best animal of the opposite sex to that of the animal awarded the Champion Gold Medal of the Aberdeen Angus Cattle Society in Classes 175-180.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Galloways.[1]

Class 181.—*Galloway Bulls, calved on or between December* 1, 1913, *and November* 30, 1917. [4 entries.]

1116 I. (£10, & Champion.[2])—JOHN CUNNINGHAM, Tarbreoch Dalbeattie, for **Sapphire 12268**, born May 4, 1914, bred by Thomas Biggar and Sons, Chapelton, Dalbeattie; *s.* Pure Gem 11356, *d.* Lizzie 2nd of Chapelton 17418 *by* Lord William 7108.

Class 182.—*Galloway Bulls, calved on or between December* 1, 1917, *and November* 30, 1918. [3 entries.]

1120 I. (£10.)—JOHN CUNNINGHAM, Tarbreoch, Dalbeattie, for **Cameron 4th of Tarbreoch 13779**, born May 14, 1918; *s.* Sapphire 12268, *d.* Tarbreoch Blue Bill 22589 *by* Tarbreoch Chief 10883.

Class 183.—*Galloway Cows or Heifers (in-milk), calved on or before November* 30, 1916. [3 entries.]

1123 I. (£10.)—JOHN CUNNINGHAM, Tarbreoch, Dalbeattie, for **Maggie Lauder 12th of Tarbreoch 23325**, born May 5, 1913, calved April 12, 1919; *s.* Challenger 10837, *d.* Maggie Lauder of Tarbreoch (17466) *by* Macdougall 4th of Tarbreoch (6841).

Class 184.—*Galloway Heifers, calved on or between December* 1, 1916, *and November* 30, 1917. [8 entries.]

1130 I. (£10, & R. N. for Champion.[2])—W. B. DONALDSON, Auchineden, Blanefield, Stirlingshire, for **Mabel 2nd of Killearn 25805**, born Dec. 4, 1916; *s.* Cuthbert 11450, *d.* Mabel 22047 *by* Cornerstone of Stepford 10013.

1131 II. (£5.)—W. B. DONALDSON, for **Rowena 4th of Killearn 25809**, born Jan. 12, 1917: *s.* Raleigh of Killearn 11988, *d.* Rowena 21736 *by* Cornerstone of Stepford 10013.

1133 III. (£3.)—LADY WIGAN, Roddam Hall, Wooperton, Northumberland, for **Queen May 10th of Tarbreoch 25779**, born Jan. 1, 1917, bred by John Cunningham, Tarbreoch, Dalbeattie; *s.* Sapphire 12268, *d.* May Queen of Glaswick 17787 *by* Professor of Tarbreoch 7097.

1128 R. N.—D. ALDRIDGE, Sketchley Hall Farm, Hinckley, for **Patience of Sketchley.**

H.C.—1126, 1127, 1129.

Class 185.—*Galloway Heifers, calved on or between December* 1, 1917, *and November* 30, 1918. [7 entries.]

1134 I. (£10.)—JOHN CUNNINGHAM, Tarbreoch, Dalbeattie, for **Netty 42nd of Tarbreoch 26354**, born Jan. 20, 1918; *s.* Sapphire 12268, *d.* Netty 39th of Tarbreoch 22586 *by* Sweepstakes 10001.

1139 II. (£5.)—FRANCIS N. M. GOURLAY, Milnton, Tynron, Thornhill, Dumfries, for **Freda 7th of Craigneston 26444**, born Dec. 13, 1917; *s.* Raleigh of Killearn 11988, *d.* Favourite of Craigneston 19625 *by* Pioneer of Kilquhanity 8470.

1138 III. (£3.)—FRANCIS N. M. GOURLAY, for **Christmas Rose of Craigneston 26446**, born Dec. 30, 1917; *s.* Raleigh of Killearn 11988, *d.* Rosetta of Craigneston 21453 *by* Keystone 9689.

1135 R. N.—W. B. DONALDSON, Auchineden, Blanefield, Stirlingshire, for **Clare 3rd of Killearn.**

Ayrshires.[3]

Class 186.—*Ayrshire Bulls, calved in or before* 1918. [2 entries.]

1142 I. (£10.)—JOHN MCALISTER, Brancote, Stafford, for **Howies Earl**, white and brown, born Jan., 1917, bred by Mr. Young, Redhills, Dumfries; *s.* Redhills Pearlstone 13803 *d.* Redhills Nora 2nd 34777.

1141 II. (£5.)—WILLIAM GIBSON, Moorside Farm, Worston, Clitheroe, for **Birnieknowe Snowball 17570**, white and brown, born Feb. 11, 1918, bred by Thomas Baird, Birnieknowe, Auchinleck, Ayrshire; *s.* Garsclough Dreadnought 15069, *d.* Birnieknowe Gay Lass 3rd 38052 *by* Birnieknowe President 8808.

Class 187a.—*Ayrshire Cows or Heifers (in-milk).* [5 entries.]

1148 I. (£10.)—WILLIAM GIBSON, Moorside Farm, Worston, Clitheroe, for **Moorside Acacia 32527**, brown with white markings, born April 23, 1912; *s.* Willoxtown St. John 8053, *d.* Willoxtown Jean 2nd 27741 *by* Willoxtown Morrison 7154.

1146 II. (£5.)—WILLIAM GIBSON, for **Auchincloigh Tibbie 26379**, white and brown, born March 20, 1910, calved April 18, 1919, bred by William Bone, Auchincloigh, Galston, Ayrshire; *s.* Auchincloigh General 7592, *d.* Auchincloigh Mirlie 3rd (A.V. 31, p. 691).

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[1] £20 towards these Prizes were given by the Galloway Cattle Society.

[2] Champion Prize of £5 given by the Galloway Cattle Society for the best animal in Classes 181-185.

[3] £20 towards these Prizes were given by the Ayrshire Cattle Herd Book Society.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

1144 III. (£3.)—WILLIAM GIBSON, for **Auchincloigh Crocus** 31954, white with brown markings, born April 17, 1912, bred by William Bone, Auchincloigh, Galston, Ayrshire; *s.* Auchincloigh Bogside 8814, *d.* Auchincloigh Derby 2nd 21020.

Class 187b.—*Ayrshire Cows or Heifers (in-calf).*

1147 I. (£10.)—WILLIAM GIBSON, Moorside Farm, Worston, Clitheroe, for **Gree Young Tibbie** 51541, white, born March 17, 1915, bred by Wm. T. Dunlop, Gree Farm, Fenwick, Ayrshire; *s.* Hillhouse Royal Ensign 11409, *d.* Gree Tibbie 36214 *by* Gree King of Sanquhar 6412.

British Friesians.[1]

The letters F.R.S. after the number of an animal indicates that such animal is registered in the Friesch Rundvee Stamboek (Friesland Cattle Herd Book) Zwartebonte (Black and White) Section.

The letters H., F.R.S., refer to the Hulpstamboek (Auxiliary Herd Book) Zwartebonte (Black and White) Section of the Friesch Rundvee Stamboek.

Unless otherwise stated, the numbers refer to the British Friesian Herd Book.

Class 188.—*British Friesian Bulls, calved in or before* 1916. [7 entries.]

1149 I. (£10, & Champion[2].)—A. & J. BROWN, Hedges Farm, St. Albans, for **Petygards (imported) Bles Albert** 4321, born Nov. 16, 1913, bred by Jan Boersma, Friens, Holland: *s* Albert 1306 H., F.R.S., *d.* Anna 3rd 10955 F.R.S. *by* Jan 2591 F.R S.

1155 II. (£5, & R.N. for Champion.[2])—G. H. WINTERBOTTOM, JUNR., Horton Hall, Northampton, for **Commieston (imported) Roland** 3721, born Feb. 5, 1914, bred by D. H. Halbesma, Warga, Holland; *s.* Rikus 6542 F.R.S., *d.* Wiepkje 13411 F.R.S. *by* Cesar 1514 H F.R.S.

1153 III. (£3.)—LORD RAYLEIGH, Terling Place, Witham, Essex, for **Terling (imported) Verwachting** 4543, born Feb. 14, 1914, bred by Messrs. Schaap, Deersum, Holland; *s.* Ceres 4497 F.R.S., *d.* Tweeling 1st 12122 F.R.S. *by* Douwe 3012 F.R.S.

1151 R. N.—ROBERT E. PARKER, Easton, Norwich, for **Osmaston (Imported) Frits.**

Class 189.—*British Friesian Bulls, calved in* 1917. [10 entries.]

1161 I. (£10.)—WILLIAM G. PLAYER, Ednaston Manor, Derby, for **Rockwood Mietje's Conqueror** 8651, born Feb. 15, bred by Major R V. Rozenburg, Lockwood, Lydney Glos.; *s.* Gorstage (imported) Mietje's Victor 3939, *d.* Gorstage Ghent 1496.

1157 II. (£5.)—SIR HENRY WEBB, BT., Kilforge, Holme Lacey, Hereford, for **Colton Vic Bram 3rd** 7547, born March 16, bred by Hugh Brown, Colton Mains, Dunfermline; *s.* Colton (imported) Vic Bram 3705, *d.* Colton Bramble 2nd 14260 *by* Fairlight Wilhelm 139.

1165 III. (£3.)—SYDNEY J. WRIGHT, Woodside, Quorn, Loughborough, for **Hedges Colton Fokke** 8025, born Nov. 28, bred by A. & J. Brown, Hedges Farm, St. Albans; *s.* Hedges (imported) Fokke 2nd 3993, *d.* Colton Lady Mary 6844 *by* Fairlight Wilhelm 139.

1162 R. N.—G. B. RADCLIFFE, Pool Bank Farm, Tarvin, Chester, for **Dunninald Haesayemairschaap.**
H.C.—1163. C.—1156, 1164.

Class 190.—*British Friesian Bulls, calved in* 1918. [15 entries.]

1169 I. (£10.)—GEORGE A. FRANCIS, West Seaton, Arbroath, for **Seaton Roland** 10593, born May 10; *s.* Commieston (imported) Roland 3721, *d.* Seaton (imported) Johanna 5th 19252 *by* Geert 2nd 5695 F.R.S.

1178 II. (£5.)—TREVOR WILLIAMS, Pynesfield Manor, West Hyde, Rickmansworth, for **Clockhouse King Akkebot** 9327, born Feb. 26; *s.* Golf Botermijn 2nd 6327, *d.* Garton (imported) Akke 6th 17794 *by* Albert 2nd 5611 F.R.S.

1175 III. (£3.)—F. W. D. ROBINSON, Roos Hall, Beccles, Suffolk, for **Beccles Botermijn** 9031, born April 15; *s.* Golf (imported) Botermijn 3919, *d.* Golf (imported) Sietske 10th 17842 *by* Jouke 5353 F.R S.

1173 IV. (£2.)—FREDERICK NEAME, Macknade, Faversham, for **Wychnor Douglas** 10887, born March 22, bred by Lieut.-Col. Harrison, Wychnor Park, Burton-on-Trent; *s.* Wychnor (imported) Yme 4709, *d.* Lavenham Dora 9652.

1166 V. (£2.)—W. A. BROCKLEHURST, Henbury Park, Macclesfield, for **Hedges Bonnie Fokke** 9863, born Feb. 23, bred by A. & J. Brown, Hedges Farm, St. Albans; *s.* Hedges (imported) Fokke 2nd 3993, *d.* Hedges Bonnie Annie 1698 *by* Hedges Hawkrigg Duke 293.

1170 R. N.—LIEUT.-COL. W. E. HARRISON, Wychnor Park, Burton-on-Trent, for **Wychnor Councillor.**
H.C.—1176. C.—1174, 1177.

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[1] £35 towards these Prizes were given by the British Friesian Cattle Society.

[2] Champion Silver Medal given by the British Friesian Cattle Society for the best Bull in Classes 188-190.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 191.—*British Friesian Cows (in-milk), calved in or before* 1915.

[14 entries.]

1189 I. (£10, & Champion.[1])—OLYMPIA AGRICULTURAL COMPANY, LIMITED, Ousegate, Selby, for **Dunninald Daphne** 14532, born Jan. 23, 1913, calved May 10, 1919, bred by Major David A. Spence, Dunninald Mains, Montrose; *s.* Dunninald Agility 1165, *d.* Dunninald Amazon 7472.

1194 II. (£5.)—CHRISTOPHER WORDSWORTH, Brooklands, South Godstone, Surrey, for **Brooklands (Imported) Sietske 4th** 17052, born April 7, 1913, calved Nov. 11, 1918, bred by J. J. Oostra, Mantgum, Holland; *s.* Bertus 5935, F.R.S., *d* Sietske 22599 H., F.R.S.

1183 III. (£3.)—A. & J. BROWN, Hedges Farm, St. Albans, for **Hedges Sweet Buttercup** 15030, born Oct. 12, 1913, calved June 7, 1919; *s.* Hedges Champion of Champions 271, *d.* Hedges Anatta 1670 *by* Watford Chief 841.

1182 IV. (£2.)—A. & J. BROWN, for **Hedges Pretty Queen** 1868, born Nov. 5, 1910, calved June 5, 1919; *s.* Hedges Prince Lawrence 303, *d.* Hedges Bloomer 1694.

1185 R. N.—JAMES DALE, Felhampton Court, Church Stretton, Salop, for **Cymric Patience.**

Class 192.—*British Friesian Heifers (in-milk), calved in* 1916 *or* 1917.

[7 entries.]

1195 I. (£10, & R. N. for Champion.[1])—JOHN BROMET, Golf Links Farm, Tadcaster, for **Hedges Monikka** 24970, born June 8, 1916, calved Oct. 4, 1918, bred by A. & J. Brown, Hedges Farm, St. Alban's; *s.* Hedges (Imported) Fokke 2nd 3993, *d.* Colton Monica 14316 *by* Colton Puritan 95.

1200 II. (£5.)—TREVOR WILLIAMS, Pynesfield Manor, West Hyde, Rickmansworth, for **Garton Akke 8th** 24588, born June 30, 1916, calved Jan. 5, 1919, bred by Richard Ford, Garton, Driffield; *s.* Garton (Imported) Bravo 3895, *d.* Garton (Imported) Akke 6th 17794 *by* Albert 2nd 5611 F.R.S.

1201 III. (£3.)—GEORGE WOODFIELD, The Leys, Gnosall, Staffs., for **Fillongley Queen Mary** 24486, born June 27, 1916, calved April 16, 1919; *s* Wychnor (Imported) Yme 4709, *d.* Fairlight Mooi-Maisie 7752 *by* Fairlight Kaiser 131.

1198 R. N.—OLYMPIA AGRICULTURAL COMPANY, LIMITED, Ousegate, Selby, for **Corsebar Blossom.**

H. C.—1197.

Class 193.—*British-Friesian Heifers, calved in* 1918. [25 entries.]

1205 I. (£10.)—A. & J. BROWN, Hedges Farm, St. Albans, for **Hedges Sprightly Dutch Girl 2nd** 33946, born Jan. 9; *s.* Hedges (Imported) Fokke 2nd 3993 *d.* Hedges Sprightly 1912 *by* Breedon.

1212 II. (£5.)—D. & F. POOL, Down Barns Farm, West End, Hayes, Middlesex, for **Ickenham Formosa** 34058, born Jan. 1; *s.* Hedges (Imported) Fokke 2nd 3993, *d.* Colton Monica 14316 *by* Colton Puritan 95.

1220 III. (£3.)—W. & R. WALLACE, Mardley Bury, Knebworth, Herts., for **Knebworth Cesar's Tibby 2nd** 34344, born Feb. 19; *s.* Knebworth (Imported) Cesar 4065, *d.* Craigie Tibby 7114 *by* Knebworth Conqueror 361.

1215 IV. (£2.)—MAJOR DAVID A. SPENCE, Dunninald Mains, Montrose, for **Dunninald Irene** 33110, born Jan. 4; *s.* Dunninald Gaatsomairschaap 6175, *d.* Dunninald Fillpail 20838 *by* Macnade Northern Star 2963.

1214 V. (£2.)—G. B. RADCLIFFE, Pool Bank Farm, Tarvin, Chester, for **Tarvin Hyacinth** 36158, born August 27; *s.* Dunninald Haeayemairschaap 7699, *d.* Tarvin Flora 26688 *by* Tarvin (Imported) Pel Klaas 4521.

1213 R. N.—G. B. RADCLIFFE, for **Tarvin Hester.**

H. C.—1207. C.—1206, 1221.

Jerseys.[2]

N.B.—In the Jersey Classes, the number inserted within brackets after the name of an animal indicates the number of such animal in the Island Herd Book. A number without brackets indicates that the animal is registered in the English Jersey Herd Book.

Class 194.—*Jersey Bulls, calved in* 1914, 1915, *or* 1916.

[5 entries.]

1228 I. (£10, & Champion.[3])—MAJOR THE HON. HAROLD PEARSON, Cowdray Park, Midhurst, Sussex, for **Pioneers Noble** 12416, dark fawn, born March 21, 1915, bred by E. E. Leonard, St. Owen's, Jersey; *s.* Golden Fern's Noble 10626, *d.* Bontilliere F.S.H.C. 9670.

1230 II. (£5, & R. N. for Champion.[3])—HORACE WALKER, Beach Bitton, Gloucester; for **Lord Oxford** 12376, broken colour, born April 14, 1915, bred by R. R. Lempriere, St. Martin's, Jersey; *s.* Agatha's Oxford Noble 11209, *d.* Lady Noble Fern 19104 *by* Golden Fern Noble 10626.

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[1] Champion Silver Medal given by the British Friesian Cattle Society for the best Cow or Heifer in Classes 191-193.

[2] £30 towards these Prizes were given by the English Jersey Cattle Society.

[3] Champion Prize of £5 given by the English Jersey Cattle Society for the best Bull in Classes 194-196.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

1227 III. (£3.)—J. E. A. WILLIS FLEMING, North Stoneham Park, Eastleigh, Hants, for **Clarencia's Gold Lad** 5446, whole colour, born March 27, 1916, bred by A. G. Haugeux, St. Owen's, Jersey; *s.* Clarencia's Gold Medallist 12251, *d.* Clarencia's Royal Girl 18673 *by* Golden Jolly 7518.

1229 R. N.—MRS. RUDD, Felbridge Park Farm, East Grinstead, for **Fire King.**
H. C.—1231.

Class 195.—*Jersey Bulls, calved in* 1917. [5 entries.]

1237 I. (£10.)—BRIG.-GEN. J. T. WIGAN, C.M.G., D.S.O., M.P., Ingatestone Court, Ingatestone, Essex, for **Red Ensign** (vol. 29, p. 28), whole colour; born May 2, bred by H. V. M. Clark, Lyndsays, Ingatestone, Essex; *s.* Illustrious 10289, *d.* Wotton Red Egg (vol. 27, p. 42) *by* Red Cloud 11818.

1235 II. (£5.)—MISS C. BYNG LUCAS, Great Culverden, Tunbridge Wells, for **Goddington Pioneer 3rd**, white, born April 21, bred by A. Miller-Hallett, Goddington, Chelsfield, Kent; *s.* Pioneer's Noble 12416, *d.* Goddington Lady Aldan 2nd (vol. 28, p. 263) *by* Goddington Noble 11th 11335.

1236 III. (£3.)—THE EXORS. OF THE LATE GEORGE MURRAY SMITH, Gumley Hall, Market Harborough, for **Bayleaf's Jap** (5545) C, whole dark grey, born March 2, bred by A. V. Godfrey, St. Queen's, Jersey; *s.* The Cid 12473, *d.* Bayleaf 61st (20048), *by* Oxford Beau 11483.

1233 R. N.—MRS. MAUD S. HUNTER, West Fields, Newnham, Daventry, for **Fish Royal.**
H. C.—1232.

Class 196.—*Jersey Bulls, calved in* 1918. [18 entries.]

1239 I. (£10.)—W. M. CAZALET, Fairlawne, Tonbridge, for **Fairlawne Berna**, whole colour, born April 6; *s.* Sir Toby 12154, *d.* Jolly Berna Lass (vol. 24, p. 335) *by* Jolly Tophunter 9646.

1246 II. (£5.)—MRS. C. M. MCINTOSH, Havering Park, Romford, for **Bright Raleigh** whole colour, born March 5, bred by G. A. Messnoy, Jersey; *s.* The Cid (5316) H.C. *d.* Bright July Princess (21258) H.C. *by* Elena's Prince (4591) H.C.

1245 III. (£3.)—MISS C. BYNG LUCAS, Great Culverden, Tunbridge Wells, for **Culverden Pioneer**, mulberry, born April 18; *s.* Pioneer's Noble 12416, *d.* La Sente's Fairy (vol. 29, p. 295) *by* Self Acting 11147.

1247 IV. (£2.)—H. LEYBORNE POPHAM, Hunstrete House, Pensford, near Bristol, for **Golden Cid**, broken colour, born May 24, bred by J. C. D. Badier, St. Martin, Jersey; *s.* The Cid 12473, *d.* Golden Joy (12246) *by* Diplomatic Golden Lad.

1251 V. (£2.)—MRS. HAYES SADLER, Norsebury, Sutton Scotney, Hants, for **Bayleaf's Cid**, dark fawn, born Jan. 19, bred by A. G. Norman, Trinity, Jersey; *s.* The Cid 12473, *d.* Bayleaf 74th 22131.

1244 R. N.—MRS. EVELYN, Wotton House, Dorking, for **Wotton Park Ranger.**
H. C.—1248, 1252, 1255.

Class 197.—*Jersey Cows (in-milk), calved in or before* 1915. [33 entries.]

1263 I. (£10, & Champion.[1])—W. M. CAZALET, Fairlawne, Tonbridge, for **Jolly Berna Lass** (vol. 24, p. 335), whole colour, born July 25, 1910, calved March 30, 1919, bred by J. Le Cornu, St. Owen's Jersey; *s.* Jolly Foxhunter 9646, *d.* Bernadotte 5th (15040) P.S.C. *by* Monster 9354.

1268 II. (£5, & R. N. for Champion.[1])—MRS. C. M. MCINTOSH, Havering Park, Romford, for **Gloxalia** (vol. 23), whole colour, born March 25, 1911, calved May 8, 1919, bred by J. Joicey, Poulton Priory, Fairford, Glos.; *s.* Fairy's Duc, *d.* Gloxinia *by* Chief Justice 7138.

1271 III (£3.)—MRS. RUDD, Felbridge Park Farm, East Grinstead, for **Meadow Vale Pride** (20774) C, whole colour, born April 1, 1913, calved April 17, 1919, bred by H. L. Palmer, Growith, Jersey; *s.* Cyclone 3rd (11274) *d.* Reyonclaine's Pride (13740) *by* Irvington (3656).

1286 IV. (£2.)—MRS. EDGAR WATTS, Eastwood, Falfield, Glos., for **Merry Morn** (vol. 26, p. 341), whole colour, born May 31, 1912, calved April 1, 1919, bred by J. S. Le Gresley, St. Martin's; *s.* Consul 11648, *d.* Little Damozel (16772) P.S.C. *by* Nobel of Oaklands (9366) P.S.C.

1257 V. (£2.)—JOSEPH CARSON, Crystalbrook, Theydon Bois, Essex, for **Agnes Duchess** 20673, whole colour, born April 24, 1913, calved March 29, 1919, bred by F. S. Rimew, St. Mary's Jersey; *s.* Golden Fern's Noble 4570, *d.* Agnes Maria F.S.H.C. (10523).

1288 R. N.—LADY WERNHER, Luton Hoo, Luton, Beds., for **Bombay's Pet 4th.**
H. C.—1259, 1264, 1270, 1272.

Class 198.—*Jersey Heifers (in-milk), calved in* 1916. [10 entries.]

1292 I. (£10.)—JOSEPH CARSON, Crystalbrook, Theydon Bois, Essex, for **Noble Fern Maracas** 23324, whole colour, born May 21, calved May 20, 1919, bred by E. E. Leonard, St. Owen's, Jersey; *s.* Golden Fern's Noble 4570, *d* Maracas 19030 *by* Noble's Lord 4312.

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[1] Champion Prize of £5 given by the English Jersey Cattle Society for the best Cow or Heifer in Classes 197, 198, 199 and 201.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

1297 II. (£5.)—THE EXORS. OF THE LATE GEORGE MURRAY SMITH, Gumley Hall, Market Harborough, for **Fern's Oxford Laurena** (23552) H.C., broken colour light brown, born May 8, calved May 31, 1919, bred by J. Picot, Trinity, Jersey; *s.* Fern's Oxford Noble 2nd (5297), *d.* Golden Fern's Laurena (19515) *by* Golden Fern's Noble (4570).

1298 III. (£3.)—R. BRUCE WARD, Godington, Ashford, Kent, for **Evergreen** (vol. 28, p. 86), whole colour, born Sept. 4, calved April 14, 1919, bred by the Dowager Countess Roberts, Ascot; *s.* Catillon's Prince 11639, *d.* Etiquette (vol. 22, p. 298).

1295 R. N.—MRS. RUDD, Felbridge Park Farm, East Grinstead, for **Premature.**

H. C.—1291, 1296.

Class 199.—*Jersey Heifers (in-milk), calved in* 1917. [11 entries.]

1307 I. (£10.)—R. BRUCE WARD, Godington, Ashford, Kent, for **Capsella,** whole colour, born Feb. 25, calved April 10, 1919, bred by H. Padwick, West Thorney, Sussex; *s.* Capsicum 10892, *d.* Jaffa, *by* La Fosse Hero 9303.

1306 II. (£5.)—MRS. HAYES SADLER, Norsebury, Sutton Scotney, Hants., for **Wotton Catriona,** fawn and white, born April 22, calved April 24, 1919, bred by Mrs. Evelyn, Wotton House, Dorking; *s.* Red Cloud 11818, *d.* Catrin (vol. 24, p. 267.)

1305 III. (£3.)—MRS. C. M. MCINTOSH, Havering Park, Romford, for **Prime Sixty,** whole colour, born March 29, calved May 30, 1919, bred by Miss Hanbury, The Manor House, Little Berkhamstead, Herts.; *s.* Sixty's Lad, 12155, *d.* Prince 2nd (vol. 27, p. 352.)

1299 R. N. JOSEPH CARSON, Crystalbrook, Theydon Bois, for **My Pet's Noblesse.**

H.C.—1301, 1302.

Class 200.—*Jersey Cows or Heifers (in-milk), bred by Exhibitor, and sired in Great Britain or Ireland.* [7 entries.]

1256 I. (£10.)—GROSVENOR BERRY, Bromley Hall, Standon, Herts., for **Tenda** (vol. 27, p. 14), white, born July 25, 1915, calved March 6, 1919; *s.* Thorn's Aurelius 2nd 12171, *d.* Casterina (vol. 27, p. 243) *by* Post Master 11110.

1296 II. (£5.)—ARTHUR B. SANDERSON, Morven, Potters Bar, for **Bentley Beauty,** broken colour, born Feb. 14, 1916, calved April 25, 1919; *s.* Virginia's Golden Fern, *d.* Bentley Blossom *by* Topsey's Hero.

1264 III. (£3.)—MRS. EVELYN, Wotton House, Dorking, Surrey, for **Wotton Margaret** (vol. 28, p. 364), whole colour, born June 13, 1914, calved May 8, 1919; *s.* Yeovil Lad 10833, *d.* Wotton Daisy Noble (vol. 25, p. 500) *by* Pavilion's Noble 10035.

1287 R. N. EDWIN GEORGE WEEKS, Lansdown House, Warmley, Bristol, for **L'Etacq Daisy 6th.**

H. C.—1261. C.—1308.

Class 201.—*Jersey Heifers, calved in* 1918. [14 entries.]

1316 I. (£10.)—MRS. C. M. MCINTOSH, Havering Park, Romford, for **Fragrance 2nd,** whole colour, born April 7, bred by J. F. Lescher, Boyles Court, Warley, near Brentwood, Essex; *s.* Butterwort, *d.* Fragrance.

1315 II. (£5.)—LT.-COL. THE HON. H. G. HENDERSON, Kitemore, Faringdon, Berks., for **Snowberry,** whole colour, born April 11; *s.* Buster 11944, *d.* Cowslip's Golden Snowflake (vol. 25, p. 305) *by* Cowslip's Golden Noble 10562.

1320 III. (£3.)—R. BRUCE WARD, Godington, Ashford, Kent, for **Elvetham Ruby 2nd,** broken colour, born March 11, bred by F.H.A.G. Calthorpe, Elvetham, Winchfield; *s.* Blighty (vol. 30) *d.* Baron's Ally *by* Financial Baron 4602.

1313 IV. (£2.)—LORD GLANELY, The Court, St. Fagans, Cardiff, for fawn, born Nov. 26; *s.* Blackberry Jem, *d.* Combination's Queen.

1314 R. N.—LT.-COL. THE HON. H. G. HENDERSON, for **Jacqueline.**

H. C.—1317, 1323. C.—1318.

Guernseys.[1]

N.B.—Unless otherwise stated, the numbers refer to the English Guernsey Herd Book.

Class 202.—*Guernsey Bulls, calved in* 1914, 1915, or 1916. [7 entries.]

1330 I. (£10, & Champion.[2])—H. FITZWALTER PLUMPTRE, Goodnestone Park, Canterbury, for **Rose Lad of Goodnestone** 3163, fawn and white, born April 11, 1915, bred by Percy Martin, Kenilworth, Warwickshire; *s.* Itchen Rose Lad 2602, *d.* Itchen Pearl 8th 8116 *by* Moss Raider 1871.

1326 II. (£5.)—MRS. C. L. HERBERT, Clytha Park, Abergavenny, for **Glebe Farmer** 3137, fawn and white, born March 9, 1915, bred by the late Hon. John R. de Clare Boscawen, Tregye, Perranwell, Cornwall; *s.* Tregonning Good Friday 2nd 2661, *d.* Sea Nymph 7868.

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[1] £49 towards these Prizes were given by the English Guernsey Cattle Society.

[2] Champion Prize of £5 given by the English Guernsey Cattle Society for the best Bull in Classes 202-204.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

1328 III. (£3.)—MRS. JERVOISE, Herriard Park, Basingstoke, for **Herriard Governor 2nd** 2977, fawn and white, born March 17, 1914; *s.* Governor of the Chêne 1297 P.S., R.G.A.S., *d.* Nora 8th of Les Howards 10233 *by* Golden Hero of L'Etiennerie 1507 P.S., R.G.A.S.

1325 R. N.—A. W. BAILEY HAWKINS, Stagenhoe Park, Welwyn, Herts., for **Stagenhoe Governor.**

H. C.—1329, 1331.

Class 203.—*Guernsey Bulls, calved in* 1917. [6 entries.]

1336 I. (£10, & R. N. for Champion.[1])—MRS. FRANK PRATT-BARLOW, Lynchmere House, Haslemere, for **Prince of Vimiera** 3577, fawn, born June 27, bred by F. Bellois, Vimiera, St. Peter Port, Guernsey; *s.* Valentines Honour of the Passée 3826 *d.* Dolly Gray 3rd of Vimiera 14728 R.G.A.S. *by* Flora's Sequel 2nd of Vimiera 2921 R.G.A.S.

1335 II. (£5.)—MRS. W. HOWARD PALMER, Murrell Hill, Binfield, Berks., for **Murrell Governors King of L'Etiennerie** 3765 E.G.C.S., lemon and white, born April 8, bred by Mrs. S. Le Prevost, L'Etiennerie, Castel, Guernsey; *s.* Governors Kings Prize 3473, *d.* Lily 2nd of Les Bordages 13263 *by* Governor of the Chêne 1297 P.S., R.G.A.S.

1333 III. (£3.)—MRS. R. C. BAINBRIDGE, Elfordleigh, Plympton, South Devon, for **Elfordleigh Prince,** 3511, fawn and little white, born Dec. 3; *s.* Elfordleigh Prince Royal 3125, *d.* Beauchamp Bramble 3rd 9298 *by* Billy of the Val 2412.

1334 R. N.—A. W. BAILEY HAWKINS, Stagenhoe Park, Welwyn, Herts., for **Chief of Stagenhoe.**

C.—1333a.

Class 204.—*Guernsey Bulls, calved in* 1918. [13 entries.]

1342 I. (£10.)—MRS. W. HOWARD PALMER, Murrell Hill, Binfield, Berks., for **Murrell Gold Boy** 3763, red and white, born March 6; *s.* Lynchmere Lord Roberts 2nd 2794, *d.* Murrell Golden Cherry 10223 *by* Hayes Fido 2nd 2460.

1344 II. (£5.)—MRS. FRANK PRATT-BARLOW, Lynchmere House, Haslemere, for **Governor 4th des Ruettes** 3718, fawn, born May 23, bred by J. Naftel, Les Ruettes, St. Saviour's, Guernsey; *s.* Polly's Governor des Ruettes 3906 R.G.A.S., *d.* Beauty of the Ruettes 6834 P.S., R.G.A.S. *by* Golden Noble 2nd 1524 P.S., R.G.A.S.

1337 III. (£3.)—MRS. LIONEL CORBETT, Hockley House, Cheriton, Alresford, Hants, for **Fancy's Dream,** fawn and white, born June 8, bred by Sir H. F. Lennard, Bt., Wickham Court, West Wickham, Kent; *s.* Warbler's Dream 3249, *d.* Wickham Fancy 8th 11058 *by* Wickham May King 2883.

1346 R. N.—MRS. FRANK PRATT-BARLOW, for **Lynchmere Pride 4th.**

H. C.—1340, 1341, 1350.

Class 205.—*Guernsey Cows (in-milk), calved in or before* 1914. [13 entries.]

1358 I. (£10, & Champion.[2])—A. W. BAILEY HAWKINS, Stagenhoe Park, Welwyn, Herts., for **Stagenhoe Rose of Gold** 11699, fawn and white, born Nov. 20, 1910, calved March 5, 1919, bred by R. E. Chilcott, Clovelly, St. Andrew's, Guernsey.

1361 II. (£5.)—SIR JAMES REMNANT, BT., M.P., The Grange, Hare Hatch, Twyford, Berks., for **Donnington Jane** 8034, dark fawn, born Nov. 14, 1909, calved May 1, 1919, bred by A. C. Harris, Donnington Manor, Chichester; *s.* Lord Howe of Warren Wood 1962, *d.* Donnington Beauty 5418 *by* Apse Frederic 1075.

1360 III. (£3.)—MRS. W. HOWARD PALMER, Murrell Hill, Binfield, Berks., for **Donata 7th of Warren Wood** 9949, lemon and white, born Jan. 1, 1913, calved April 25, 1919, bred by late J. Smail, Warren Wood, Hayes, Kent; *s.* Godolphin Bar Gold 2136, *d.* Donnington Eversweet 6113 *by* Donnington Lad 1369.

1359 R. N.—MRS. JERVOISE, Herriard Park, Basingstoke, for **Fanny du Foulon 22nd.**

C.—1353, 1357, 1363.

Class 206.—*Guernsey Cows or Heifers (in-milk), calved in* 1915 *or* 1916. [9 entries.]

1370 I. (£10.)—MRS. W. HOWARD PALMER, Murrell Hill, Binfield, Berks., for **Murrell Robina** 11571, red and white, born April 25, 1915, calved June 5, 1919; *s.* Murrell New King 2802, *d.* Bobs 27th 7169 *by* Champion of the Bourg 1808.

1366 II. (£5.)—MRS. LIONEL CORBETT, Hockley House, Cheriton, Alresford, Hants, for **Wickham Fancy 9th** 11808, fawn and white, born Feb. 26, 1915, calved April 26, 1919, bred by Sir H. F. Lennard, Bt., Wickham Court, West Wickham, Kent; *s.* Wickham May King 2883, *d.* Wickham Fancy 2nd 7133 *by* Hanbury 1669.

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[1] Champion Prize of £5 given by the English Guernsey Cattle Society for the best Bull in Classes 202-204.

[2] Champion Prize of £5 given by the English Guernsey Cattle Society for the best Cow or Heifer in Classes 205-208.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

1371 III. (£3.)—H. FITZWALTER PLUMPTRE, Goodnestone Park, Canterbury, for **Butterwort 14th** 11172, fawn and little white, born May 2, 1915, calved April 26, 1919; *s.* Governor of the Barras 2966, *d.* Butterwort 9th 9342 *by* Fleur-de-Lys 4th 2135.

1365 R. N.—MRS. R. C. BAINBRIDGE, Elfordleigh, Plympton, for **Elfordleigh Roma.**
C.—1364, 1369.

Class 207.—*Guernsey Heifers, calved in* 1917. [9 entries.]

1376 I. (£10.)—MRS. W. HOWARD PALMER, Murrell Hill, Binfield, Berks., for **Murrell Donata** 12984, lemon and white, born March 26; *s.* Lynchmere Lord Roberts 2nd 2794 *d.* Donata 7th of Warren Wood 9949 *by* Godolphin Bar Gold 2136.

1378 II. (£5.)—H. FITZWALTER PLUMPTRE, Goodnestone Park, Canterbury, for **Lottie of Goodnestone 4th** 12926, fawn and white, born April 16; *s.* Governor of the Barras 2966, *d.* Lottie of Goodnestone 2nd 10180 *by* Golden Noble 1930.

1373 III. (£3.)—MRS. R. C. BAINBRIDGE, Elfordleigh, Plympton, South Devon, for **Trequean Ruby 4th** 13158, fawn and white, born May 16, calved May 4, 1919, bred by W. Penrose, 23 Chapel Street, St. Just, Cornwall; *s.* Trequean Pete 2nd 3246, *d.* Trequean Ruby 2nd 11033 *by* Trequean Prince 2nd 2678.

1374 R. N.—W. T. CURTIS, Fitznells, Ewell, Surrey, for **Donnington Gladness 9th.**
H. C.—1380. C.—1375, 1377.

Class 208.—*Guernsey Heifers, calved in* 1918. [13 entries.]

1393 I. (£10, & R. N. for Champion.[1])—E. J. WYTHES, Copped Hall, Epping, Essex, for **Copped Hall Pansy**, orange, fawn and white, born June 29; *s.* Trewithen Fusilier 3061, *d.* Engew Pansy 10006 by Ladock Dairyman 2049.

1388 II. (£5.)—MRS. R. C. BAINBRIDGE, Elfordleigh, Plympton, S. Devon, for **Elfordleigh Orange**, fawn and white, born May 8; *s.* Elfordleigh Prince Royal 3125, *d.* Beauchamp Citron Blossom 2nd 9300 *by* Billy of the Val 3rd 2412.

1385 III. (£3.)—A. W. BAILEY HAWKINS, Stagenhoe Park, Welwyn, Herts., for **Stagenhoe Rose of Gold 3rd**, fawn, no white, born April 2; *s.* Stagenhoe Governor 3405, *d.* Stagenhoe Rose of Gold 4763 F.S., R.G.A.S.

1382 R. N.—MRS. R. C. BAINBRIDGE, for **Elfordleigh Lemon.**
H. C.—1388, 1391.

Kerries.[2]

N.B.—In the Kerry Classes, the number inserted within brackets after the name of an animal indicates the number of such animal in the Irish Kerry Herd Book. A number without brackets indicates that the animal is registered in the English Kerry Herd Book.

Class 209.—*Kerry Bulls, calved in* 1915, 1916, 1917, *or* 1918. [2 entries.]

1394 I. (£10.)—THE KNIGHT OF KERRY, Valencia Island, Co. Kerry, Ireland, for **Valencia Chieftain** (806), born March 24, 1915; *s.* Valencia Earla-Mohr (736), *d.* Valencia Fiona (3427) *by* Desmond (469).

1395 II. (£5, & Champion[3].)—COL. E. ROYDS, M.P., Holy Cross, Caythorpe, Grantham, for **Minley Emperor**, born Dec. 5, 1917, bred by Laurence Currie, Minley Manor, Farnborough, Hants; *s.* Valencia Lord 3rd (370), *d.* Minley Mistress (1253).

Class 210.—*Kerry Cows (in-milk), calved in or before* 1915. [3 entries.]

1396 I. (£10, & R. N. for Champion.[4])—THE WELLINGTON LIVE STOCK CO., LIMITED, Coolham, Sussex, for **Coquet Dabchick** 2038, black, born May 17, 1914, calved April 9, 1919, bred by Captain John L. Ames, Thistleyhaugh, Longhorsley, Northumberland; *s.* La Mancha Lifeguard 284, *d.* Walton Lanky 2nd 1864 *by* Walton Diver 270.

Class 211.—*Kerry Heifers (in-milk), calved in* 1916 *or* 1917. [No entry.]

Class 212.—*Kerry Heifers (not in-milk), calved in* 1917 *or* 1918. [3 entries.]

1401 I. (£10, & Champion.[4])—THE WELLINGTON LIVE STOCK CO., LIMITED, Coolham, Sussex, for **Coquet Gipsy** (Vol. 18, p. 5). born May 12, 1917, bred by Captain John L. Ames, Thistleyhaugh, Longhorsley, Northumberland; *s.* Coquet Duke 380, *d.* Coquet Dabchick 2038 *by* La Mancha Lifeguard 284.

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[1] Champion Prize of £5 given by the English Guernsey Cattle Society for the best Cow or Heifer in Classes 205-208.

[2] £24 towards these Prizes were given by the English Kerry and Dexter Cattle Society.

[3] Challenge Trophy, value £20, given by the English Kerry and Dexter Cattle Society for the best Bull in Class 209 whose dam has won a prize or commendation in the Milk or Butter Tests at either of the Shows of the R.A.S.E., Bath and West, Royal Counties, Tring, and London Dairy Show.

[4] Silver Challenge Cup, value Twenty-five Guineas, given by the English Kerry and Dexter Cattle Society for the best Animal in Classes 209-212.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

1400 II. (£5.)—THE WELLINGTON LIVE STOCK CO., LIMITED, for **Coquet Geranium** (vol. 18, p. 5), black, born April 22, 1917, bred by Captain John L. Ames, Thistleyhaugh, Longhorsley, Northumberland; *s.* Coquet Duke 380, *d.* Walton Lanky 2nd 1864 *by* Walton Diver 270.

1399 III. (£3.)—COL. E. ROYDS, M.P., Holy Cross, Caythorpe, Grantham, for **Caythorpe Gort 2nd** (vol. 18), born June 9, 1917; *s.* Minley Nigger 348, *d.* Caythorpe Gort 1790 *by* Kilmorna Duke 16th 250.

Dexters.[1]

N.B.—In the Dexter Classes, the number inserted within brackets after the name of an animal indicates the number of such animal in the Irish Dexter Herd Book. A number without brackets indicates that the animal is registered in the English Dexter Herd Book.

Class 213.—*Dexter Bulls, calved in* 1915, 1916, 1917, *or* 1918. [7 entries.]

1404 I. (£10. & Champion.[2])—H. G. JONES, Downford, Mayfield Sussex, for **Downford Dandy**, born Jan. 1918, bred by R. Tait Robertson, The Hutch, Malahide, Co. Dublin.

1403 II. (£5.)—WALTER H. EVANS, Vale Head, Wightwick, near Wolverhampton, for **Oakridge Pat** (vol. 18, p. 52), born Feb. 16, 1917, bred by the Rev. R. Lingard Simkin, Down Ampney Vicarage, Cricklade, Wilts; *s.* Brokenhurst Coy Boy 539, *d.* Oakridge Patricia 2198 *by* Oakridge Rex 366.

1408 III. (£3.)—THE REV. R. LINGARD SIMKIN, Down Ampney Vicarage, Cricklade, for **Oakridge Scout**, born May 25, 1917; *s.* Brokenhurst Coy Boy 539, *d.* Oakridge Smile 2nd 1995 *by* Oakridge Lad 449.

1402 R. N.—LIEUT.-COL. THE HON. B. BATHURST, Polebrook, Hever, Kent, for **Hever Boy**.

H. C.—1405, 1406. C.—1407.

Class 214.—*Dexter Cows (in-milk), calved in or before* 1915. [6 entries.]

1411 I. (£10.)—ALFRED C. KING, Braishfield Manor, Romsey, Hants, for **La Mancha Madeline** (2272) F.S., born March, 1913, calved May 9, 1919, breeder unknown.

1412 II. (£5.)—LADY KATHLEEN MORANT, Brockenhurst Park, Hants, for **Gort Peach 9th** 2540, born Feb. 10, 1913, calved May 15, 1919, bred by D. M. Rattray, Ballybunion, Ireland; *s.* Gort Fred (584), *d.* Gort Peach (2235).

1410 III. (£3.)—ALFRED C. KING, for **Gort Daisy 5th** (2501), born April 6, 1910, calved May 18, 1919, bred by D. M. Rattray, Gortnaskehey, Ballybunion, Co. Kerry; *s.* Gort Toney (548), *d.* Gort Daisy 2nd (2370) *by* Gort Punch (526).

H. C.—1409, 1413.

Class 215.—*Dexter Heifers (in-milk), calved in* 1916 *or* 1917. [4 entries.]

1418 I. (£10.)—LADY KATHLEEN MORANT, Brockenhurst Park, Hants., for **Peach Blossom of Claragh**, black, born Feb. 21, 1917, calved March 28, 1919, bred by Capt. P. E. Benn, Mount Leader, Millstreet, Co. Cork; *s.* Gort Ned 607, *d.* Gort Peach 9th 2540 *by* Gort Fred 2nd 584.

1417 II. (£5.)—LADY KATHLEEN MORANT, for **Brockenhurst Tinkle** 2393, black, born April 26, 1916, calved June 2, 1919; *s.* Oakridge Grandaddy 510, *d.* Grinstead Tinkle 2181 *by* Oakridge Bluebeard 447.

1415 III. (£3.)—H. G. JONES, Downford, Mayfield, Sussex, for **Downford Daisy**, born Feb., 1917, calved June 2, 1919, breeder unknown.

Class 216.—*Dexter Heifers (not in-milk), calved in* 1917 *or* 1918. [2 entries.]

1420 (£10, & R. N. for Champion.[2])—H. G. JONES, Downfield, Mayfield, Sussex, for **Downfield Dairymaid**, born Jan. 1918, breeder unknown.

1419 II. (£5.)—LT.-COL. THE HON. B. BATHURST, Polebrook, Hever, Kent, for **Alpha 2nd**, born May 18, 1918; *s.* Grinstead Terror 586, *d.* Hope 2124 *by* Good Luck 337.

Milk Yield Prizes.

Class 217.—*Dairy Shorthorn Cows or Heifers.* [24 entries.]

728 I. (£10, & Champion.[3])—CAPT. ARNOLD S. WILLS, Thornby Hall, Northampton, for **Duchess of Cranford 3rd** (vol. 55, p. 1184), red, born October 29, 1908, calved May 9, 1919, bred by the late George Taylor, Cranford, Middlesex; *s.* Beau Sabreur 74049, *d.* Duchess of Armathwaite 4th *by* Golden Robin 57185.

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[1] £24 towards these Prizes were given by the English Kerry and Dexter Cattle Society.

[2] Challenge Cup, value Twenty-five Guineas, given by the English Kerry and Dexter Cattle Society for the best Animal in Classes 213-216.

[3] Champion Prize of £30, with £5 to the Reserve Number, given by a Society interested in the production of milk, for the Cows obtaining the highest number of points in the Dairy Shorthorn, Lincolnshire Red Shorthorn, Devon, South Devon, Longhorn, Red Poll and British Friesian Milk Yield Competitions.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

716 II. (£5. & R. N. for Champion.[1])—W. G. MILLAR, Bampton, Oxon., for **Cowslip Pride** (vol. 56, p. 475), roan, born January 5, 1909, calved May 1, 1919, bred by W. Bateman, Beaumont Grange, Lancaster; *s.* Beaumont Champion 94256, *d.* Cowslip 2nd (vol. 56, p. 475) *by* Prince 96482.

715 III. (£3.)—R. W. HOBBS & SONS, for **Hawthorn 9th.** (See Class 117.)

H. C.—721, 736, 744.

Class 218.—*Non-Pedigree Dairy Shorthorn Cows or Heifers.*

[No entry.]

Class 219.—*Lincolnshire Red Shorthorn Cows or Heifers.* [6 entries.]

[No Award.]

Class 220.—*Devon Cows or Heifers.* [7 entries.]

934 I. (£10.)—W. G. BUSK, Wraxall Manor, Dorchester, for **Wraxall Lucky** A448, born in 1911, calved June 2, 1919, breeder unknown.

935 II. (£5.)—W. G. BUSK, for **Wynford Baby 3rd.** (See Class 144.)

938 III. (£3.)—JOHN H. CHICK, for **Wynford Spark.** (See Class 144.)

Class 221.—*South Devon Cows or Heifers.*

[No entry.]

Class 222.—*Longhorn Cows or Heifers.* [3 entries.]

970 I. (£10.)—CAPT. C. W. COTTRELL-DORMER, for **Lorna.** (See Class 154.)

973 II. (£5.)—WILLIAM HANSON SALE, Arden Hill, Atherstone, for **Arden Cinderella** (vol. 10, p. 25), born June 16, 1916, calved May 23, 1919; *s.* Arden King Maber 645, *d.* Arden Lady Panza (vol. 8, p. 44) *by* Putley Gay Lad 546.

Class 223.—*Red Poll Cows or Heifers.* [7 entries.]

1048 I. (£10.)—LT.-COL. SIR MERRIK R. BURRELL, BT., Knepp Castle, West Grinstead, for **Plumstead Prudence** 24212, born September 24, 1912, calved January 28, 1919, bred by Major D. G. Astley, Little Plumstead Hall, Norwich; *s.* Battleaxe 10142, *d.* Alice 18984 *by* Redcoat 5141.

1053 II. (£5.)—CAPT. A. J. M. RICHARDSON, Seven Springs, Cheltenham, Glos., for **Brightwell Queen** 23911, born November 15, 1912, calved March 18, 1919, bred by E. G. Pretyman, Orwell Park, Ipswich; *s.* St. Andrew 10088, *d.* Magnet 21246 *by* Majestic 9714.

1054 III. (£3.)—CAPT. A. J. M. RICHARDSON, for **Harefield Princess A.** 24029, born January 22, 1913, calved May 23, 1919, bred by J. B. Chevallier, Aspall Hall, Suffolk; *s.* Acton Dairyman 9880, *d.* Aspall Princess 2nd 21537 *by* Prince 9830.

Class 224.—*Ayrshire Cows or Heifers.* [4 entries.]

1143 I. (£10.)—WILLIAM GIBSON, for **Moorside Acacia.** (See Class 187a.)

1144 II. (£5.)—WILLIAM GIBSON, for **Auchencloigh Crocus.** (See Class 187a.)

1146 III. (£3.)—WILLIAM GIBSON, for **Auchencloigh Tibbie.** (See Class 187a.)

Class 225.—*British Friesian Cows or Heifers.* [10 entries.]

1183 I. (£10.)—A. & J. BROWN, for **Hedge's Sweet Buttercup.** (See Class 191.)

Class 226.—*Jersey Cows or Heifers.* [18 entries.]

1269 I. (£10, Champion,[2] & Special.[3])—MAJOR THE HON. HAROLD PEARSON, Cowdray Park, Midhurst, Sussex, for **Gannemead 2nd** (vol. 27, p. 279), light grey, born Nov. 4, 1912, calved March 17, 1919, bred by N. G. Gwynne, Bevendean, Oxshott, Surrey; *s.* Peach's Aurelius 11099, *d.* Gannemead (vol. 24, p. 309) *by* Helcia's Champion 10992.

1286 II. (£5, & R.N. for Champion.[2])—MRS. EDGAR WATTS, for **Merry Morn.** (See Class 197.)

1272 III. (£3.)—MRS. HAYES SADLER, Norsebury, Sutton Scotney, Hants., for **Golden Fleece 9th** (vol. 28, p. 264), light fawn, born June 8, 1914, calved April 4, 1919, bred by E. Le Gresley, Grouville, Jersey; *s.* Golden Fern's Noble 10626, *d.* Golden Fleece 6th 13599 *by* Morny Cannon 7598.

H. C.—1256, 1263, 1270, 1271, 1273, 1275, 1278, 1285, 1287, 1289, 1308.

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[1] Champion Prize of £30, with £5 to the Reserve Number, given by a Society interested in the production of milk for the Cows obtaining the highest number of points in the Dairy Shorthorn, Lincolnshire Red Shorthorn, Devon, South Devon, Longhorn, Red Poll and British Friesian Milk Yield Competitions.

[2] Champion Prize of £20, with £5 to the Reserve Number, given by a Society interested in the production of milk, for the Cows obtaining the highest number of points in the Ayrshire, Jersey and Guernsey Milk Yield Competitions.

[3] Special Prize of £10 10*s.* given by the Royal Jersey Agricultural Society for the best Jersey Cow in Class 226 obtaining the greatest number of points.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 227.—*Guernsey Cows or Heifers.* [14 entries.]

1361 I. (£10.)—SIR JAMES REMNANT, BT., M.P., for **Donnington Jane.** (See Class 205.)

1351 II. (£5.)—MRS. R. C. BAINBRIDGE, Elfordleigh, Plympton, South Devon, for **Trequean Maggie 2nd** 10402, fawn and little white, born Feb. 11, 1913, calved Nov. 29, 1918, bred by W. Penrose, 23 Chapel Street, St. Just, Cornwall; *s.* Godolphin Arthur 1664, *d.* Trequean Maggie 8291 *by* Hunguet's Royal 1944.

1371 III. (£3.)—H. FITZWALTER PLUMPTRE, for **Butterwort 14th.** (See Class 206.)

H. C.—1365.

Class 228.—*Kerry Cows or Heifers.* [2 entries.]

[No Award.]

Class 229.—*Dexter Cows or Heifers.* [4 entries.]

1413 I. (£10, & Champion.[1])—LADY KATHLEEN MORANT, Brockenhurst Park, Hants, for **Harley Penelope** 1768, black, born Nov. 12, 1908, calved April 12, 1919, bred by G. Habgood, Harley Lodge, Wimborne; *s.* Kingwood Comely Boy 264, *d.* Harley Prudence 1526 *by* Chantry Bob 172.

1412 II. (£5, & R.N. for Champion.[4])—LADY KATHLEEN MORANT, for **Gort Peach 9th.** (See Class 214.)

Butter Tests. [64 entries.]

Class 230a.—*Cows exceeding* 900 *lb. live weight.*[2]

1286 I. (£15, & G. M.[3])—MRS. EDGAR WATTS, for **Merry Morn.** (See Class 197.)

1275 II. (£10, & S. M.[3])—R. BRUCE WARD, Godington, Ashford, Kent, for **Ida** (vol. 28, p. 277), whole colour, born March 15, 1914, calved Feb. 10, 1919, bred by Major J. Baldwin, Northfield, Worcs.; *s.* Antidote 10843, *d.* Matilda *by* Marshall MacMahon 9695.

728 III. (£5.)—CAPT. ARNOLD S. WILLS, for **Duchess of Cranford 3rd.** (See Class 217.)

1284 (B. M.[3])—DR. HERBERT WATNEY, Buckhold, Pangbourne, Berks., for **Violettes Oxford** (vol. 26, p. 408), whole colour, born Dec. 4, 1911, calved Jan. 8, 1919; *s.* Violettes Maple 2nd 10819, *d.* Oxfords Teasel (vol. 23, p. 378) *by* Oxfords Aurelius 10032.

Certificates of Merit.[4]—1270, 1276, 1280, 1282, 1283.

C.—723, 744, 1182, 1183, 1351.

Class 230b.—*Cows not exceeding* 900 *lb. live weight.*[2]

1269 I. (£15.)—MAJOR THE HON. HAROLD PEARSON, for **Gannemead 2nd.** (See Class 226.)

1285 II. (£10.)—MRS. EDGAR WATTS, Eastwood, Falfield, Glos., for **Doctor's Princess** (vol. 27, p. 26), whole colour, born Aug. 3, 1915, calved Feb. 28, 1919, bred by J. Carson, Crystalbrook, Theydon Bois, Essex; *s.* Oaklands Doctor 11793, *d.* Blonde's Princess (vol. 26, p. 276) *by* Patty's Prince 10380.

1273 III. (£5.)—MRS. HAYES SADLER, Norsebury, Sutton Scotney, Hants., for **Hazon Chain** (vol. 26, p. 303), dark fawn, born Nov. 28, 1911, calved Feb. 26, 1919, bred by W. S. Langlands, Hazon House, Epsom, Surrey; *s.* Daisy Chain, *d.* Hazon Valentine (vol. 20, p. 333) *by* Shamrock 8707.

Certificates of Merit.[4]—1256, 1272, 1287, 1289, 1308.

Class 231.—*Dairy Shorthorn Cows or Heifers.*[5] [18 entries.]

728 I. (£10.)—CAPT. ARNOLD S. WILLS, for **Duchess of Cranford 3rd.** (See Class 217.)

723 II. (£5.)—F. H. THORNTON, Kingsthorpe Hall, Northampton, for **Dairymaid 6th** (vol. 58, p. 508), roan, born Feb. 26, 1910, calved March 17, 1919, bred by John Dargue, Burneside Hall, Kendal; *s.* Camp Fire 101784, *d.* Dairymaid 5th *by* Duke of Brigflatts 85808.

744 III. (£3.)—CAPT. ARNOLD S. WILLS, for **Thornby Foggathorpe 2nd.** (See Class 118.)

H. C.—770.

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[1] Champion Prize of £10, with £5 to the Reserve Number, given by a Society interested in the production of milk, for the Cows obtaining the highest number of points in the Kerry and Dexter Milk Yield Competitions.

[2] Prizes given by the English Jersey Cattle Society.

[3] Gold Medal, Silver Medal, and Bronze Medal given by the English Jersey Cattle Society for the three Jersey animals obtaining the greatest number of points in the Butter Tests.

[4] Certificates of Merit given by the English Jersey Cattle Society for Jersey Cows, not being Prize Winners, obtaining the following points:—Cows five years old and upwards 35 points; Cows under five years old 30 points.

[5] Prizes given by the Dairy Shorthorn Association.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

SHEEP.

Oxford Downs.

Class 232.—*Oxford Down Shearling Rams.* [16 entries.]

1430 I. (£10), & 1429 II. (£5.)—Hugh W. Stilgoe, The Grounds, Adderbury, near Banbury.
1422 III. (£3.)—William H. Hitch, Elkstone Manor, Cheltenham.
1426 R. N.—Frederick Penson, Taston, Charlbury, Oxon.
H.C.—1432, 1436.

Class 233.—*Oxford Down Ram Lambs.*[1] [12 entries.]

1445 I. (£10), & 1446 R. N.—Frederick Penson, Taston, Charlbury, Oxon.
1437 II. (£5.) & 1438 III. (£3.)—Henry Akers & Co., Moat House, Black Bourton, Clanfield, S.O., Oxon.
C.—1439, 1441, 1442, 1444.

Class 234.—*Three Oxford Down Ram Lambs.* [9 entries.]

1449 I. (£10.)—Henry Akers & Co., Moat House, Black Bourton, Clanfield S.O., Oxon.
1454 II. (£5.)—R. W. Hobbs & Sons, Kelmscott, Lechlade.
1455 III. (£3.)—The Duke of Marlborough, K.G., Blenheim Palace, Woodstock.
1456 R.N.—Frederick Penson, Taston, Charlbury, Oxon.
H. C.—1453.

Class 235.—*Three Oxford Down Shearling Ewes.* [3 entries.]

1458 I. (£10.)—William H. Hitch, Elkstone Manor, Cheltenham.
1459 II. (£5.)—Frederick Penson, Taston, Charlbury, Oxon.
1460 III (£3.)—C. C Ll. Williams, Llanrumney Hall, St. Mellons, Cardiff.

Class 236.—*Three Oxford Down Ewe Lambs.* [9 entries.]

1466 I. (£10.)—Robert W. Hobbs & Sons, Kelmscott, Lechlade.
1461 II. (£5.)—Henry Akers & Co., Moat House, Black Bourton, Clanfield, Oxon.
1464 III. (£3.)—James T. Hobbs, Manor Farm, Maisey Hampton, Fairford, Glos.
1467 R. N.—The Duke of Marlborough, K.G., Blenheim Palace, Woodstock.
C.—1462, 1463, 1468.

Shropshires.[2]

Class 237.—*Shropshire Two-Shear Rams.* [7 entries.]

1472 I. (£10), & 1473 III. (£3)—Frank Bibby, Hardwicke Grange, Shrewsbury.
1470 II. (£5), & 1471 R.N.—A. S. Berry, Shenstone Hall, Lichfield.
H. C.—1474, 1476. C.—1475.

Class 238.—*Shropshire Shearling Rams.* [20 entries.]

1479 I. (£10). & 1480 IV. (£2.)—Frank Bibby, Hardwicke Grange, Shrewsbury.
1481 II. (£5.)—Richard E. Birch, Maes Elwy, St. Asaph, Denbighshire.
1495 III. (£3.)—The Duke of Westminster, G.C.V.O., D.S.O., Eaton Hall, Chester.
1488 R. N.—Charles W. Kellock, Highfields, Audlem, Cheshire.
H. C.—1486, 1487, 1494. C.—1477, 1482, 1490, 1491.

Class 239.—*Three Shropshire Shearling Rams.* [16 entries.]

1511 I. (£15.)—The Duke of Westminster, G C.V.O., D.S.O., Eaton Hall, Chester.
1498 II. (£10), & 1499 IV. (£2.)—Frank Bibby, Hardwicke Grange, Shrewsbury.
1510 III. (£5.)—E. Craig Tanner, Eyton-on-Severn, Shrewsbury.
1505 R. N.—Charles W. Kellock, Highfields, Audlem, Cheshire.
H. C.—1507, 1508, 1512. C.—1497, 1500, 1502, 1503, 1506.

Class 240.—*Shropshire Ram Lambs.* [4 entries.]

1516 I. (£10.)—The Duke of Westminster, G.C.V.O., D.S.O., Eaton Hall, Chester.
1515 II. (£5.)—E. Craig Tanner, Eyton-on-Severn, Shrewsbury.
1514 R.N.—Kenneth W. Milnes, The Field, Hampton Bishop, Hereford.

Class 241.—*Three Shropshire Ram Lambs.* [4 entries.]

1517 I. (£10.)—Richard E. Birch, Maes Elwy, St. Asaph, Denbighshire.
1520 II. (£5.)—The Duke of Westminster, G.C.V.O., D.S O., Eaton Hall, Chester.
1519 III. (£3.)—E. Craig Tanner, Eyton-on-Severn, Shrewsbury.
1518 R. N.—Kenneth W. Milnes, The Field, Hampton Bishop, Hereford.

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[1] Prizes given by the Oxford Down Sheep Breeders' Association.

[2] £60 towards these Prizes were given by the Shropshire Sheep Breeders' Association.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 242.—*Three Shropshire Shearling Ewes.* [8 entries.]

1521 I. (£10.)—FRANK BIBBY, Hardwicke Grange, Shrewsbury.
1528 II. (£5.)—E. CRAIG TANNER, Eyton-on-Severn, Shrewsbury.
1525 III. (£3.)—KENNETH W. MILNES, Stanway Manor, Church Stretton, Salop.
1524 R. N.—CHARLES W. KELLOCK, Highfields, Audlem, Cheshire.
H. C.—1527. C.—1522, 1523.

Class 243.—*Three Shropshire Ewe Lambs.* [5 entries.]

1529 I. (£10.)—RICHARD E. BIRCH, Maes Elwy, St. Asaph, Denbighshire.
1533 II. (£5.)—E. CRAIG TANNER, Eyton-on-Severn, Shrewsbury.
1531 III. (£3.)—CHARLES WALFORD KELLOCK, Highfields, Audlem, Cheshire.
1530 R. N.—JAMES JOSEPH BREWIN, Bryn Hyfryd, Holywell, N. Wales.

Southdowns.

Class 244.—*Southdown Two-Shear Rams.*[1] [9 entries.]

1537 I. (£10, & R. N. for Champion.[2])—E. C. FAIRWEATHER, Avisford Park, Arundel, Sussex.
1538 II. (£5.)—REGINALD S. HICKS, Wilbraham Temple, Cambs.
1535 III. (£3.)—SIR JEREMIAH COLMAN, BT., Gatton Park, Surrey, for ram bred by Reginald S. Hicks, Wilbraham, Cambs.
1534 R. N.—H.M. THE KING, Sandringham.

Class 245.—*Southdown Shearling Rams.* [15 entries.]

1549 I. (£10, & Champion.[2])—E. C. FAIRWEATHER, Avisford Park, Arundel, for ram bred by O. C. Millen, Adisham Court, Canterbury.
1556 II. (£5.)—LADY WERNHER, Luton Hoo, Luton, Beds.
1554 III. (£3.)—THE DUKE OF RICHMOND AND GORDON, K.G., Goodwood, Chichester.
1552 R. N.—REGINALD S. HICKS, Wilbraham Temple, Cambs.
H. C.—1543. C.—1547, 1550, 1553, 1555.

Class 246.—*Three Southdown Shearling Rams.*[1] [10 entries.]

1562 I. (£10.)—E. C. FAIRWEATHER, Avisford Park, Arundel, for rams bred by O. C. Millen, Adisham Court, Canterbury.
1566 II. (£5.)—THE DUKE OF RICHMOND AND GORDON, K.G., Goodwood, Chichester.
1558 III. (£3.)—H.M. THE KING, Sandringham.
1564 R. N.—REGINALD S. HICKS, Wilbraham Temple, Cambs.
H. C.—1567.

Class 247.—*Three Southdown Ram Lambs.* [9 entries.]

1570 I. (£10.)—E. C. FAIRWEATHER, Avisford Park, Arundel.
1573 II. (£5.)—THE DUKE OF RICHMOND AND GORDON, K.G., Goodwood, Chichester.
1572 III. (£3.)—REGINALD S. HICKS, Wilbraham Temple, Cambs.
1571 R. N.—LADY FITZGERALD, Buckland, Faringdon, Berks.

Class 248.—*Three Southdown Shearling Ewes.* [6 entries.]

1580 I. (£10, & Champion.[3])—REGINALD S. HICKS, Wilbraham Temple, Cambs.
1582 II. (£5, & R. N. for Champion.[3])—LADY WERNHER, Luton Hoo, Luton, Beds.
1578 III. (£3.)—H.M. THE KING, Sandringham.
1579 R. N.—SIR JEREMIAH COLMAN, BT., Gatton Park, Surrey.
H. C.—1577, 1581.

Class 249.—*Three Southdown Ewe Lambs.* [8 entries.]

1585 I. (£10.)—E. C. FAIRWEATHER, Avisford Park, Arundel.
1584 II. (£5.)—THE EARL OF DERBY, K.G., Hatchfield Farm, Newmarket.
1583 III. (£3.)—H.M. THE KING, Sandringham.
1587 R. N.—THE DUKE OF RICHMOND AND GORDON, K.G., Goodwood, Chichester.

Hampshire Downs.

Class 250.—*Hampshire Down Two-Shear Rams.*[4] [2 entries.]

1592 I. (£10.)—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Reading, for **Basildon Clipper H 30.**

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[1] Prizes given by the Southdown Sheep Society.

[2] Champion Gold Medal, value £10 10s. (or £10 10s. in cash) given by the Southdown Sheep Society for the best Ram in Classes 244 and 245.

[3] Silver Medal (or £1 in cash) given by the Southdown Sheep Society for the best Pen of Ewes or Ewe Lambs in Classes 248 and 249.

[4] Prizes given by the Hampshire Down Sheep Breeders' Association.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 251.—*Hampshire Down Shearling Rams.* [9 entries.]

1599 I. (£10.)—Pendley Stock Farms, Pendley, Tring, for ram bred by J. G. Williams, Pendley Manor, Tring.
1597 II. (£5.)—Major J. A. Morrison, D.S.O., Basildon Park, Reading, for Basildon Swell H.322, bred by G. Phillippi, Crawley Court Winchester.
1598 III. (£3.)—Pendley Stock Farms, for ram bred by J. G. Williams, Pendley Manor, Tring.
1601 R. N.—The Trustees of the Lord Wandsworth Institution, Long Sutton, Winchfield, for Wandsworth Scotney 2.
H. C.—1600. C.—1593.

Class 252.—*Hampshire Down Ram Lambs.*[1] [14 entries.]

1614 I. (£10.)—Pendley Stock Farms, Pendley, Tring, for ram, bred by J. G. Williams, Pendley Manor, Tring.
1611 II. (£5.)—Major J. A. Morrison, D.S.O., Basildon Park, Reading.
1603 III. (£4.)—Alfred E. Blackwell, The Home Farm, Chipperfield, King's Langley, Herts.
1606 IV. (£2.)—Mrs. Jervoise Herriard Park, Basingstoke.
1608 R. N.—Edward Thomas Judd, Cocum, Sutton Scotney, Hants.
H. C.—1615. C.—1604, 1605, 1612.

Class 253—*Three Hampshire Down Ram Lambs.* [8 entries.]

1618 £10, & Champion.[2])—Mrs. Jervoise, Herriard Park, Basingstoke.
1616 II. (£5.)—Alfred E. Blackwell, The Home Farm, Chipperfield, King's Langley, Herts.
1621 III. (£3.)—Major J. A. Morrison, D.S.O., Basildon Park, Reading.
1622 R. N.—Pendley Stock Farms, Pendley, Tring.
H. C.—1617. C.—1619, 1620, 1623.

Class 254.—*Three Hampshire Down Shearling Ewes.* [5 entries.]

1627 I. (£10), & 1628 III. (£3.)—Pendley Stock Farms, Pendley, Tring, for ewes, bred by J. G. Williams, Pendley Manor, Tring.
1625 II. (£5), & 1626 R.N.—Major J. A. Morrison, D.S.O., Basildon Park, Reading.
H. C.—1624.

Class 255.—*Three Hampshire Down Ewe Lambs.* [7 entries.]

1633 I. (£10, & R. N. for Champion.[2])—Major J. A. Morrison, D.S.O., Basildon Park, Reading.
1630 II. (£5.)—Mrs. Jervoise, Herriard Park, Basingstoke.
1629 III. (£3.)—Alfred E. Blackwell, The Home Farm, Chipperfield, King's Langley Herts.
1631 R. N.—Edward Thomas Judd, Cocum, Sutton Scotney, Hants.
H.C.—1634, 1635. C.—1632.

Suffolks.

Class 256.—*Suffolk Two-Shear Rams.*[3] [1 entry.]

1636 I. (£10.)—Herbert E. Smith, The Grange, Walton, Felixstowe.

Class 257.—*Suffolk Shearling Rams.* [5 entries.]

1640 I. (£10), & 1641 II. (£5.)—Herbert E. Smith, The Grange, Walton, Felixstowe.
1638 III. (£3.)—A. Preston Jones, Mickleover House, Mickleover, Derby, for Grange Derby, bred by Herbert E. Smith, The Grange, Walton, Suffolk.
1637 R. N.—Chivers & Sons, Ltd., Histon, Cambs.

Class 258.—*Suffolk Ram Lambs.*[3] [6 entries.]

1647 I. (£10), & 1646 II. (£5.)—Herbert E. Smith, The Grange, Walton, Felixstowe.
1642 III. (£3.)—Chivers & Sons, Ltd., Histon, Cambs.
1645 R. N.—S. R. Sherwood, Playford, Ipswich.
H. C.—1644.

Class 259.—*Three Suffolk Ram Lambs.* [5 entries.]

1652 I. (£10.)—Herbert E. Smith, The Grange, Walton, Felixstowe.
1650 II. (£5.)—W. F Paul, Kirton Lodge, Kirton, Ipswich.
1651 III. (£3).—S. R. Sherwood, Playford, Ipswich.
1648 R. N.—Chivers & Sons, Ltd., Histon, Cambs.

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[1] Prizes given by the Hampshire Down Sheep Breeders' Association.

[2] Champion Prize of £10 given by the Hampshire Down Sheep Breeders' Association for the best Ram Lamb, Pen of Ram Lambs or Ewe Lambs in Classes 252, 253 and 255.

[3] Prizes given by the Suffolk Sheep Society.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 260.—*Three Suffolk Shearling Ewes.* [3 entries.]

1653 I. (£10.)—CHIVERS & SONS, LTD., Histon, Cambs.
1655 II. (£5.)—W. F. PAUL, Kirton Lodge, Kirton, Ipswich.

Class 261.—*Three Suffolk Ewe Lambs.* [4 entries.]

1659 I. (£10.)—HERBERT E. SMITH, The Grange, Walton, Felixstowe.
1658 II. (£5.)—S. R. SHERWOOD, Playford, Ipswich.
1656 III. (£3.)—CHIVERS & SONS, LTD., Histon, Cambs.

Dorset Downs.[1]

Class 262.—*Dorset Down Shearling Rams.* [2 entries.]

1660 I. (£10), & 1661 II. (£5.)—RANDOLPH TORY, Charisworth Manor, Blandford.

Class 263.—*Three Dorset Down Ram Lambs.* [2 entries.]

1662 I. (£10), & 1663 II. (£5.)—RANDOLPH TORY, Charisworth Manor, Blandford.

Class 264.—*Three Dorset Down Shearling Ewes.*

[No entry.]

Dorset Horns.[2]

Class 265.—*Dorset Horn Shearling Rams, dropped after November* 1, 1917. [5 entries.]

1668 I. (£10), & 1667 II. (£5.)—FRANK J. MERSON & SON, Farringdon, North Petherton, Bridgwater.
1666 III. (£3.)—G. A. & R. A. KINGSWELL, Wellow Farm, Yarmouth, Isle of Wight, for Wellow No. 47 3799.
1665 R. N.—F. P. BROWN, Kingston Farm, Chillerton, Isle of Wight, for Kingston No. 121.

Class 266.—*Three Dorset Horn Ram Lambs, dropped after November* 1, 1918. [3 entries.]

1670 I. (£10.)—G. A. & R. A. KINGSWELL, Wellow Farm, Yarmouth, Isle of Wight.
1669 II. (£5.)—F. P. BROWN, Kingston Farm, Chillerton, Isle of Wight.
1671 (£3.)—FRANK J. MERSON & SON, Farringdon, North Petherton, Bridgwater.

Class 267.—*Three Dorset Horn Shearling Ewes, dropped after November* 1, 1917. [4 entries.]

1672 I. (£10.)—F. P. BROWN, Kingston Farm, Chillerton, Isle of Wight.
1673 II. (£5.)—ERNEST GEORGE HEAL, New Close Farm, Yarmouth, Isle of Wight.
1674 III. (£3.)—G. A. & R. A. KINGSWELL, Wellow Farm, Yarmouth, Isle of Wight.
1675 R. N.—FRANK J. MERSON & SON, Farringdon, North Petherton, Bridgwater.

Class 268.—*Three Dorset Horn Ewe Lambs, dropped after November* 1, 1918. [5 entries.]

1678 I. (£10.)—ALFRED JOHNSON, The Manor Farm, Symondsbury, Bridport, Dorset.
1679 II. (£5.)—G. A. & R. A. KINGSWELL, Wellow Farm, Yarmouth, Isle of Wight.
1676 III. (£3.)—F. P. BROWN, Kingston Farm, Chillerton, Isle of Wight.
1677 R. N.—ERNEST GEORGE HEAL, Newclose Farm, Yarmouth, Isle of Wight.

Ryelands.[3]

Class 269.—*Ryeland Rams, Two-Shear and upwards.* [8 entries.]

1683 I. (£10.)—MRS. C. L. HERBERT, Clytha Park, Abergavenny, for Newbury Gough 474, born in 1915, bred by the late F. E. Gough, The Moor, Bodenham, Herefordshire.
1688 II. (£5.)—DAVID J. THOMAS, Talachddu Farm, Brecon, for Talachddu Model 621, born in 1917.
1686 III. (£3.)—EDWARD JONES, Pennybont, Senny Bridge, Breconshire, for Talachddu Lord 490, born in 1916, bred by D. J. Thomas, Talachddu, Brecon.
1685 R. N.—CECIL CLAUDE JACOBS, Manor Farm, Tidmarsh, Reading, for Royal Monarch.
H. C.—1682. C.—1681, 1687.

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[1] £15 towards these Prizes were given by the Dorset Down Sheep Breeders' Association.

[2] £18 towards these Prizes were given by the Dorset Horn Sheep Breeders' Association.

[3] £27 towards these Prizes were given by the Ryeland Flock Book Society.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 270.—*Ryeland Shearling Rams.* [15 entries.]

1703 I. (£10.)—DAVID J. THOMAS, Talachddu Farm, Brecon, for **Talachddu Bountiful.**

1692 II. (£5.)—F. T. GOUGH, Lugwardine, Hereford, for **Oldport**, bred by C. H. Hobbs, Oldport, Oswestry.

1702 (£3.) DAVID J. THOMAS, for **Talachddu Brand.**

1700 R. N.—CECIL CLAUDE JACOBS, Manor Farm, Tidmarsh, Reading, for **Royal Cardiff.**
H. C.—1693.

Class 271.—*Three Ryeland Ram Lambs.* [5 entries.]

1705 I. (£10.)—F. T. GOUGH, Lugwardine, Hereford.

1704 II. (£5.)—ALFRED FRIEND, Estate Office, Brasted, Sevenoaks.

1709 III. (£3.)—DAVID J. THOMAS, Talachddu, Farm, Brecon.

1706 R. N.—MRS. C. L. HERBERT, Clytha Park, Abergavenny.

Class 272.—*Three Ryeland Shearling Ewes.* [8 entries.]

1712 I. (£10.)—F. T. GOUGH, Lugwardine, Hereford.

1714 II. (£5.)—MRS. C. L. HERBERT, Clytha Park, Abergavenny.

1713 III. (£3.)—R. R. GRIBBLE, Gabriels Manor, Edenbridge.

Class 273.—*Three Ryeland Ewe Lambs.* [5 entries.]

1719 I. (£10.)—F. T. GOUGH, Lugwardine, Hereford.

1723 II. (£5.)—DAVID J. THOMAS, Talachddu, Brecon.

1720 III. (£3.)—MRS. C. L. HERBERT, Clytha Park, Abergavenny.

1721 R. N.—W. HAROLD HUMPHREYS, The Folly, Eckington, Worcs.

Kerry Hill (Wales).[1]

Class 274.—*Kerry Hill (Wales) Rams, Two-Shear and upwards.* [7 entries.]

1724 I. (£10.)—WILLIAM ALDERSON, Glanmiheli, Kerry, Montgomeryshire, for **Kerry Masterpiece 4732**, born in 1916.

1729 II. (£5.)—CAPT. JOHN MURRAY NAYLOR, Leighton Hall, Welshpool, for **Graig Gayboy 4663**, born in 1916, bred by J. C. Jones, Graig Llanfair, Mont.

1726 III. (£3.)—JOHN ANWYL, Preston Hall Farm, Preston Brockhurst, Shrewsbury, for **Weston Master 5395**, born in 1916.

1725 R.N.—WILLIAM ALDERSON, for **Powisland Cropper.**

Class 275.—*Kerry Hill (Wales) Shearling Rams.* [13 entries.]

1736 I. (£10.)—LORD HARLECH, Brogyntyn, Oswestry, for **Brogyntyn Monarch.**

1731 II. (£5.)—WILLIAM ALDERSON, Glanmiheli, Kerry, Mont.

1738 III. (£3.)—THE EARL OF POWIS, Powis Castle, Welshpool.

1733 R. N.—JOHN ANWYL, Preston Hall Farm, Preston Brockhurst, Shrewsbury, for **Brockhurst Admiral.**
H.C.—1740.

Class 276.—*Kerry Hill (Wales) Ram Lambs.* [12 entries.]

1750 I. (£10.)—CAPT. JOHN MURRAY NAYLOR, Leighton Hall, Welshpool, for **Leighton Captain.**

1752 II. (£5.)—ROBERT E. PARKER, Easton, Norwich.

1751 III. (£3.)—CAPT. JOHN MURRAY NAYLOR, for **Leighton Clemenceau.**

1754 R. N.—MAJOR THE DUKE OF WESTMINSTER, G.C.V.O., D.S.O., Eaton Hall, Chester.
H. C.—1755.

Class 277.—*Three Kerry Hill (Wales) Shearling Ewes.* [5 entries.]

1757 I. (£10.)—CAPT. JOHN MURRAY NAYLOR, Leighton Hall, Welshpool.

1759A II. (£5.)—THE EARL OF POWIS, Walcot, Lydbury North.

1759 III. (£3.)—THE EARL OF POWIS, Powis Castle, Welshpool.

1756 R. N.—LORD HARLECH, Brogyntyn, Oswestry.

Lincolns.[2]

Class 278.—*Lincoln Two-Shear Rams.* [4 entries.]

1761 I. (£10, & Champion.[3])—CLIFFORD NICHOLSON, Horkstow Manor, Barton-on-Humber, for **Ketton Horkstow Manor 15405**, bred by T. C. Molesworth, Ketton, Stamford.

1763 II. (£5.)—W. H. WATSON, Temple Bruer, Lincoln.

1762 III. (£3.)—CLIFFORD NICHOLSON, for **Baumber Horkstow Manor 15279**, bred by G. C. Sharpe, Baumber Park, Horncastle.

1760 R. N.—CLIFFORD NICHOLSON.

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[1] £20 towards these Prizes were given by the Kerry Hill (Wales) Flock Book Society.

[2] £48 towards these Prizes were given by the Lincoln Long-Wool Sheep Breeders' Association.

[3] Champion Prize of £5 given by the Lincoln Long-Wool Sheep Breeders' Association for the best Ram in Classes 278 and 279.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 279.—*Lincoln Shearling Rams.* [14 entries.]

1773 I. (£10, & R. N. for Champion[1]), 1774 III. (£3) & 1775 R. N.—Clifford Nicholson, Horkstow Manor, Barton-on-Humber.
1776 II. (£5.)—W. H. Watson, Temple Bruer, Lincoln.
H. C.—1768, 1772. C.—1764.

Class 280.—*Five Lincoln Shearling Rams.* [5 entries.]

1781 I. (£15.)—Clifford Nicholson, Horkstow Manor, Barton-on-Humber.
1780 II. (£10.)—J. H. Dean & Sons, Heath House, Nocton, Lincoln.
1784 III. (£5.)—W. H. Watson, Temple Bruer, Lincoln.
1778 R.N.—Joseph Brocklebank, Carlton-le-Moorland, Newark.
H. C.—1779.

Class 281.—*Three Lincoln Ram Lambs.* [4 entries.]

1788 I. (£10.)—Clifford Nicholson, Horkstow Manor, Barton-on-Humber.
1786 II. (£5), & 1787 R. N.—J. H. Dean & Sons, Heath House, Nocton, Lincoln.
1789 III. (£3.)—W. H. Watson, Temple Bruer, Lincoln.

Class 282.—*Three Lincoln Shearling Ewes.* [3 entries.]

1790 I. (£10), & 1791 III. (£3.)—Clifford Nicholson, Horkstow Manor, Barton-on-Humber.
1792 II. (£5.)—W. H. Watson, Temple Bruer, Lincoln.

Class 283.—*Three Lincoln Ewe Lambs.* [3 entries.]

1794 I. (£10.)—Clifford Nicholson, Horkstow Manor, Barton-on-Humber.
1793 II. (£5.)—J. H. Dean & Sons, Heath House, Nocton, Lincoln.
1795 III. (£3.)—W. H. Watson, Temple Bruer, Lincoln.

Leicesters.[2]

Class 284.—*Leicester Shearling Rams.* [5 entries.]

1798 I. (£10), 1799 II. (£5), & 1800 III. (£3.)—E. F. Jordan, Eastburn, Driffield.
1796 R. N.—W. M. Curzon Herrick, Beau Manor Park, Loughborough.

Class 285.—*Three Leicester Ram Lambs.* [1 entry.]

1801 I. (£10.)—W. M. Curzon Herrick, Beau Manor Park, Loughborough.

Class 286.—*Three Leicester Shearling Ewes.* [2 entries.]

1802 I. (£10), & 1803 II. (£5.)—E. F. Jordan, Eastburn, Driffield, Yorks.

Class 287.—*Three Leicester Ewe Lambs.* [1 entry.]

1804 I. (£10.)—W. M. Curzon Herrick, Beau Manor Park, Loughborough.

Border Leicesters.[3]

Class 288.—*Border Leicester Rams, Two-Shear and upwards.* [4 entries.]

1806 I. (£10, & Champion.[4])—R. G. Murray & Son, Spittal, Biggar, for **Judgment 4611**, born in 1916, bred by Robert Hamilton, Hillend, Biggar.
1805 II. (£5.)—The Rt. Hon. A. J. Balfour, M.P., Whittingehame, Prestonkirk, for **Vanguard 4740**, born in 1916, bred by John Kinnaird, Newmains, Prestonkirk.
1807 III. (£3.)—William R. Ross, Milton of Culloden, Inverness, for **Young Dron**, born in 1916, bred by T. Gordon Richmond, Dron, Perth.
1808 R. N.—William R. Ross, for **Prince Charles**.

Class 289.—*Border Leicester Shearling Rams.* [7 entries.]

1809 I. (£10.)—The Rt. Hon. A. J. Balfour, M.P., Whittingehame, Prestonkirk.
1812 II. (£5.)—W. W. Hope, Phantassie, Prestonkirk, for **Face the Foe 4824**.
1813 III. (£3.)—R. G. Murray & Son, Spittal, Biggar.
1814 R. N.—William R. Ross, Milton of Culloden, Inverness.
C.—1810.

Class 290.—*Border Leicester Shearling Ewes.* [7 entries.]

1816 I. (£10, & R. N. for Champion.[4])—The Rt. Hon. A. J. Balfour, M.P., Whittingehame, Prestonkirk.

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[1] Champion Prize of £5 given by the Lincoln Long-Wool Sheep Breeders' Association for the best Ram in Classes 278 and 279.

[2] £18 towards these Prizes were given by the Leicester Sheep Breeders' Association.

[3] £18 towards these Prizes were given by the Society of Border Leicester Sheep Breeders.

[4] Perpetual Challenge Cup given by the Society of Border Leicester Sheep Breeders for the best Ram or Ewe in Classes 288-290. A Gold Medal will be given by the Society of Border Leicester Sheep Breeders to the winner of the Challenge Cup.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

1823 II. (£5.)—WILLIAM R. ROSS, Milton of Culloden, Inverness.
1821 III. (£3.)—R. G. MURRAY & SON, Spittal, Biggar.
1820 R. N.—W. W. HOPE, Phantassie Prestonkirk.
C.—1817.

Wensleydales.[1]

Class 291.—*Wensleydale Blue-faced Rams, Two-Shear and upwards.* [5 entries.]

1824 I. (£10.)—LORD HENRY BENTINCK, M.P., Underley Hall, Kirkby Lonsdale, for Admiral Drake 2327, born in 1917, bred by the late E. Wyatt Gibson, Hestholme, Leyburn.
1826 II. (£5.)—LORD HENRY BENTINCK, M.P., for Gotim Jet 2367, born in 1917, bred by J. W. Astley, West Malton, Skepton.
1825 III. (£3.)—LORD HENRY BENTINCK, M.P., for Drake 2236, born in 1916, bred by the late E. Wyatt Gibson, Hestholme, Leyburn.
1827 R. N.—JOHN WILLIAM GREENSIT, Holme-on-Swale, Thirsk, for Holme Ideal.
H. C.—1828.

Class 292.—*Wensleydale Blue-faced Shearling Rams.* [9 entries.]

1829 I. (£10.)—LORD HENRY BENTINCK, M.P., Underley Hall, Kirkby Lonsdale.
1832 II. (£5.)—JOHN WILLIAM GREENSIT, Holme-on-Swale, Thirsk, for Holme Quality.
1831 III. (£3.)—T. E. CLARKE, Challan Hall, Silverdale, for Challan Controller, bred by W. Milner, Slyne Hall, Lancaster.
1833 R. N.—JOHN WILLIAM GREENSIT.
H. C.—1830.

Class 293.—*Three Wensleydale Blue-faced Shearling Rams.* [4 entries.]

1838 I. (£10.)—LORD HENRY BENTINCK, M.P., Underley Hall, Kirkby Lonsdale.
1840 II. (£5.)—JOHN WILLIAM GREENSIT, Holme-on-Swale, Thirsk, for rams bred by Matthew Burton, Aspen Grove, Sutton, Thirsk.
1839 III. (£3.)—JOHN WILLIAM GREENSIT.
1841 R. N.—JOHN HARGRAVE, Wath, Ripon.

Class 294.—*Three Wensleydale Blue-faced Shearling Ewes.* [3 entries.]

1842 I. (£10), & 1843 II. (£5.)—LORD HENRY BENTINCK, M.P., Underley Hall, Kirkby Lonsdale.

Class 295.—*Wensleydale Ram, Shearling and upwards.* [2 entries.]

1845 I. (£10.)—JOHN WILLIAM GREENSIT, Holme-on-Swale, Thirsk, for ram born in 1918.
1846 R. N.—JOHN HARGRAVE, Wath, Ripon.

Class 296.—*Three Wensleydale Shearling Ewes.* [2 entries.]

1848 I. (£10.)—GEORGE WELLS, Green End, Melmerby, Ripon, for ewes born in 1918, bred by Thomas Wood, Middleton Quernow, Melmerby.
1847 R. N.—JOHN HARGRAVE, Wath, Ripon.

Lonks.[2]

Class 297.—*Lonk Rams, Shearling and upwards.* [1 entry.]

1849 I. (£10.)—JOSEPH EADSON, Langdale, 365 Padiham Road, Burnley, Lancs., for Langdale Masher, born in 1916, bred by James Hargreaves, Harle Syke nr. Burnley.

Class 298.—*Lonk Ram Lambs.* [2 entries.]

1851 I. (£10), & 1850 II. (£5.)—JOSEPH EADSON, Langdale, 365 Padiham Road, Burnley.

Class 299.—*Three Lonk Shearling Ewes.* [1 entry.]

1852 I. (£10.)—JOSEPH EADSON, Langdale, 365 Padiham Road, Burnley, Lancs., for ewes bred by Jas. C. Ashworth, Overtown, Cliviger.

Derbyshire Gritstones.

Class 300.—*Derbyshire Gritstone Rams, Shearling and upwards.* [2 entries.]

1853 I. (£10.)—JOSEPH EADSON, Langdale, 365 Padiham Road, Burnley, Lancs., for Harewood No. 99, bred by the Earl of Derby, Clough House, Wildboarclough, Macclesfield.

Class 301.—*Three Derbyshire Gritstone Shearling Ewes.* [3 entries.]

1856 I. (£10.)—CHARLES WATERHOUSE, Castle Farm, Middleton-by-Youlgrave, Bakewell, Derbyshire, for Nos. 6 × 22, 6 × 26 and 6 × 47.

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[1] £25 towards these Prizes were given by the Wensleydale Blue-faced Sheep Breeders' Association and Flock Book Society.

[2] £10 towards these Prizes were given by the Lonk Sheep Breeders' Association.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Kent or Romney Marsh.[1]

Class 302.—*Kent or Romney Marsh Two-Shear Rams.* [5 entries.]

1861 I. (£10), & 1860 III. (£3.)—J. EGERTON QUESTED, The Firs, Cheriton, Kent.
1858 II. (£5.)—L. H. & G. W. FINN, Westwood Court, Faversham.

Class 303.—*Kent or Romney Marsh Shearling Rams.* [21 entries.]

1875 I. (£15, & Champion.[2]), 1877 III. (£5), & 1876 IV. (£3).—J. EGERTON QUESTED, The Firs, Cheriton, Kent.
1880 II. (£10, & R. N. for Champion.[2])—ASHLEY STEVENS, Luddenham Court, Faversham, Kent, for Luddenham.
H. C.—1867, 1879. C.—1868, 1871, 1874.

Class 304.—*Five Kent or Romney Marsh Shearling Rams.* [9 entries.]

1890 I. (£20.) -J. EGERTON QUESTED, The Firs, Cheriton, Kent.
1892 II. (£15.)—WALTER F. WOOD, Chekes Court, Sittingbourne, for Yonge Nos. 1, 20, 34, 48, and 56 of 1918.
1885 III. (£10.)—L. H. & G. W. FINN, Westwood Court, Faversham.
1889 IV. (£5.)—ROBERT L MOND, Combe Bank, Sevenoaks, Kent.
1891 R. N.—ASHLEY STEVENS, Luddenham Court, Faversham, Kent.
H. C.—1884. C.—1887.

Class 305.—*Three Kent or Romney Marsh Ram Lambs.* [11 entries.]

1895 I. (£10), & 1894 R. N.—L. H. & G. W. FINN, Westwood Court, Faversham.
1900 II. (£5.)—J. EGERTON QUESTED, The Firs, Cheriton, Kent.
1899 III. (£3.)—ROBERT L. MOND, Combe Bank, Sevenoaks, Kent.
H. C.—1893, 1897, 1902. C.—1901, 1903.

Class 306.—*Three Kent or Romney Marsh Shearling Ewes.* [6 entries.]

1905 I. (£10, & Champion[3]), & 1906 R. N.—ROBERT L. MOND, Combe Bank, Sevenoaks
1907 II. (£5, & R. N. for Champion[3]), & 1908 III. (£3.)—J. EGERTON QUESTED, The Firs, Cheriton, Kent.

Class 307.—*Three Kent or Romney Marsh Ewe Lambs.* [9 entries.]

1915 I. (£10.)—ROBERT L. MOND, Combe Bank, Sevenoaks, Kent.
1916 II. (£5.)—J. EGERTON QUESTED, The Firs, Cheriton, Kent.
1911 III. (£3.)—L. H. & G. W. FINN, Westwood Court, Faversham.
1910 R. N.—H. B. AMOS, Ripton, Ashford, Kent.
H. C.—1917, 1918. C.—1913.

Cotswolds.[4]

Class 308.—*Cotswold Shearling Rams.* [7 entries.]

1921 I. (£10), 1922 III. (£3), & 1923 R. N.—WILLIAM GARNE, Ablington, Fairford, Glos.
1925 II. (£5.)—FREDERICK NEWMAN, Cold Aston, Bourton-on-the-Water, Glos.
H. C.—1919, 1920.

Class 309.—*Three Cotswold Ram Lambs.* [3 entries.]

1928 I. (£10), & 1927 II. (£5.)—WILLIAM GARNE, Ablington, Fairford, Glos.
1926 III. (£3.)—COL. EDWIN P. BRASSEY, Manor Farm, Upper Slaughter, Glos.

Class 310.—*Three Cotswold Shearling Ewes.* [3 entries.]

1930 I. (£10), & 1931 III. (£3.)—WILLIAM GARNE, Ablington, Fairford, Glos.
1929 II. (£5.)—COL. EDWIN P. BRASSEY, The Manor Farm, Upper Slaughter, Glos.

Class 311.—*Three Cotswold Ewe Lambs.* [2 entries.]

1932 I. (£10), & 1933 II. (£5.)—WILLIAM GARNE, Ablington, Fairford, Glos.

Devon Long-Wools.[5]

Class 312.—*Devon Long-Wool Shearling Rams.* [3 entries.]

1935 I. (£10), & 1936 II. (£5.)—EDWIN LAWRENCE, Rull Farm, Cullompton, Devon.
1934 R. N.—WILLIAM BRENT. Clampit, Callington, Cornwall.

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[1] £83 towards these Prizes were given by the Kent or Romney Marsh Sheep Breeders' Association.

[2] Champion Prize of £10 10s. given by the Kent or Romney Marsh Sheep Breeders' Association for the best Ram in Classes 302 and 303.

[3] Champion Prize of £10 10s. given by the Kent or Romney Marsh Sheep Breeders' Association for the best Pen of Ewes or Ewe Lambs in Classes 306 and 307.

[4] £18 towards these Prizes were given by the Cotswold Sheep Society.

[5] £15 towards these Prizes were given by the Devon Long-Woolled Sheep Breeders' Society.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 313.—*Three Devon Long-Wool Ram Lambs.* [2 entries.]

1937 I. (£10), & 1938 II. (£5.)—Edwin Lawrence, Rull Farm, Cullompton, Devon.

Class 314.—*Three Devon Long-Wool Shearling Ewes.* [1 entry.]

1939 I. (£10.)—Edwin Lawrence, Rull Farm, Cullompton, Devon.

South Devons.[1]

Class 315.—*South Devon Two-Shear Rams.* [1 entry.]

1940 I. (£10.)—Edmund Henry Body, Twelvewoods, Liskeard, Cornwall, for **Hawker No. 7**, 13107, bred by W. Hawke, St. Columb, Cornwall.

Class 316.—*South Devon Shearling Rams.* [3 entries.]

1941 I. (£10.)—William Hawke, Junr., Trebudannon, St. Columb, Cornwall.
1942 II. (£5), & 1943 R. N.—John Stooke, Sherford, Brixton, Plymouth.

Class 317.—*Three South Devon Ram Lambs.* [3 entries.]

1945 I. (£10.)—William Hawke, Junr., Trebudannon, St. Columb, Cornwall.
1944 II. (£5.)—John Stooke, Sherford, Brixton, Plymouth.

Class 318.—*Three South Devon Shearling Ewes.* [4 entries.]

1948 I. (£10), & 1949 R. N.—John Stooke, Sherford, Brixton, Plymouth.
1947 II. (£5.)—William Hawke, Junr., Trebudannon, St. Columb, Cornwall.

Class 319.—*Three South Devon Ewe Lambs.* [3 entries.]

1951 I. (£10.)—William Hawke, Junr., Trebudannon, St. Columb, Cornwall.
1952 II. (£5.)—John Stooke, Sherford, Brixton, Plymouth.

Dartmoors.[2]

Class 320.—*Dartmoor Rams, Two-Shear and upwards.* [6 entries.]

1954 I. (£10.)—H.R.H. The Prince of Wales, K.G., Stoke Climsland, Callington, Cornwall, for 1227, bred by R. S. Luscombe, Wisdome, Cornwood, Devon.
1956 II. (£5.)—W. A. Johns & Sons, Cleave Kelly, Lifton, Devon, for **Brent 1159**, bred by H. J. Kingwell, Bow Grange, Totnes, S. Devon.
1959 R. N.—R. S. Luscombe, Wisdome, Cornwood, Devon.

Class 321.—*Dartmoor Shearling Rams.* [6 entries.]

1962 I. (£10.)—W. A. Johns & Sons, Cleave Kelly, Lifton, Devon, for **Cleave No. 181.**
1965 II. (£5.)—R. S. Luscombe, Wisdome, Cornwood, Devon.
1960 R. N.—H.R.H. The Prince of Wales, K.G., Stoke Climsland, Callington, Cornwall.

Class 322.—*Three Dartmoor Shearling Ewes.* [3 entries.]

1967 I. £10), & 1968 II. (£5.)—Kingwell & Sons, Great Aish, South Brent, Devon.
1966 R. N.—George Glanfield, West Lake, Belstone, Okehampton, Devon.

Exmoor Horns.[3]

Class 323.—*Exmoor Rams, Two-Shear and upwards.* [4 entries.]

1971 I. (£10.)—J. & O. Robins, Lydcott Hall, High Bray, South Molton, for **Lydcott No. 38**, 787, born in 1917.
1969 II. (£5.)—Board of Agriculture and Fisheries, Food Production Department, Amesbury Farm Settlement, Wilts., for **Leigh No. 63** (No. 768, vol. 12), born in 1917, bred by T. C. Pearse, Leigh, Dulverton, Somerset.
1970 III. (£3.)—Board of Agriculture and Fisheries, Food Production Department, for **Bulford No. 55** (No. 818, vol. 12), born in 1917, bred by Allan C. Young, Watergate House, Bulford, Wilts.

Class 324.—*Exmoor Shearling Rams.* [4 entries.]

1975 I. (£10.)—J. & O. Robins, Lydcott Hall, High Bray, South Molton, for **Lydcott No. 43.**
1974 II. (£5.)—Board of Agriculture and Fisheries, Food Production Department, Amesbury Farm Settlement, Wilts., for **Bulford No. 32**, bred by Allan C. Young, Watergate House, Bulford, Wilts.
1976 III. (£3.)—John H. Turner, Duddings, Dunster, Taunton, for **Aires**, bred by the late J. H. Turner.

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[1] £30 towards these Prizes were given by the South Devon Flock Book Association.
[2] £15 towards these Prizes were given by the Dartmoor Sheep Breeders' Association.
[3] £18 towards these Prizes were given by the Exmoor Horn Sheep Breeders' Society.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 325.—*Three Exmoor Shearling Ewes.* [2 entries.]

1977 I. (£10.)—J. & O. ROBINS, Lydcott Hall, High Bray, South Molton.
1978 II. (£5.)—JOHN H. TURNER, Duddings, Dunster, Taunton, for ewes bred by the late J. H. Turner.

Cheviots.[1]

Class 326.—*Cheviot Rams, Two-Shear and upwards.* [3 entries.]

1979 I. (£10.)—ROBSON & DODD, Newton, Bellingham, Northumberland, for **Yearle Whin**, born in 1916, bred by John Hall, Earle Hill, Wooler, Northumberland.
1980 II. (£5.)—JOHN ROBSON, JUNR., Lynegar, Watten, Caithness, for **War Savings**, born in 1917, bred by John Robson, Millknowe, Duns.
1981 III. (£3.)—JOHN ROBSON, Newton, Bellingham, Northumberland, for ram born in 1917.

Class 327.—*Cheviot Shearling Rams.* [3 entries.]

1983 I. (£10), & 1984 II. (£5.)—JOHN ROBSON, Newton, Bellingham, Northumberland.
1982 III. (£3.)—JOHN ROBSON, JUNR., Lynegar, Watten, Caithness.

Class 328.—*Cheviot Shearling Ewes.* [3 entries.]

1985 I. (£10.)—JOHN ROBSON, JUNR., Lynegar, Watten, Caithness.
1987 II. (£5), & 1986 III. (£3.)—JOHN ROBSON, Newton, Bellingham, Northumberland.

Herdwicks.[2]

Class 329.—*Herdwick Rams, Two-Shear and upwards.* [3 entries.]

1990 I. (£10.)—CHRISTOPHER G. WILSON, Kentmere Hall, Kendal, for rams born in 1914.
1988 II. (£5), & 1989 R. N.—S. D. STANLEY-DODGSON, Tarnbank, Cockermouth, for rams born in 1914.

Class 330.—*Herdwick Shearling Rams.* [2 entries.]

1991 I. (£10), & 1992 II. (£5.)—S. D. STANLEY-DODGSON, Tarnbank, Cockermouth.

Class 331.—*Three Herdwick Shearling Ewes.* [1 entry.]

1993 I. (£10.)—S. D. STANLEY-DODGSON, Tarnbank, Cockermouth.

Welsh Mountain.[3]

Class 332.—*Welsh Mountain Rams, Two-Shear and upwards.* [1 entry.]

1994 I. (£10.)—THE UNIVERSITY COLLEGE OF NORTH WALES, College Farm, Aber, Bangor, for **Snowdon H 8**, born in 1915, bred by Humphrey Ellis, Tairmeibion, Bangor.

Class 333.—*Welsh Mountain Shearling Rams.* [2 entries.]

1995 I. (£10.)—THE UNIVERSITY COLLEGE OF NORTH WALES, College Farm, Aber, Bangor, for **Snowdon K 1**.
1996 II. (£5.)—THE UNIVERSITY COLLEGE OF NORTH WALES, for **Snowdon K 2**.

Class 334.—*Welsh Mountain Ram Lambs.* [1 entry.]

1997 I. (£10.)—THE UNIVERSITY COLLEGE OF NORTH WALES, College Farm, Aber, Bangor.

Class 335.—*Three Welsh Mountain Shearling Ewes.* [2 entries.]

1998 I. (£10.)—THE UNIVERSITY COLLEGE OF NORTH WALES, College Farm, Aber, Bangor.

South Welsh.[4]

Open only to Exhibitors resident in South Wales and Monmouthshire.

Class 336.—*South Welsh Ram, Shearling and upwards.*
[No entry.]

Class 337.—*Three South Welsh Shearling Ewes.*
[No entry.]

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[1] £18 towards these Prizes were given by Breeders of Cheviot Sheep.

[2] £15 towards these Prizes were given by the Herdwick Sheep Breeders' Association.

[3] £20 towards these Prizes were given by the Welsh Mountain Sheep Flock Book Society.

[4] Prizes given by the Cardiff Local Committee.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Black-faced Mountain.

Class 338.—*Black-faced Mountain Rams, Shearling and upwards.* [4 entries.]

2002 I. (£10.)—Geoffrey Robson, Closehill, Bellingham, for ram born in 1918.

2000 R. N.—Octavius Monkhouse, Cowshill, Wearhead, co. Durham.
H. C.—2001, 2003.

Class 339.—*Black-faced Mountain Shearling Ewes.* [3 entries.]

2004 I. (£10.)—Octavius Monkhouse, Cowshill, Wearhead, co. Durham.

2005 R. N.—John Robson, Newton, Bellingham, Northumberland.
H. C.—2006.

GOATS.[1]

Class 340.—*Male Goats, Anglo-Nubian, entered or eligible for entry in the Anglo-Nubian section of the Herd Book, over 2 years old.* [2 entries.]

2007 I. (£3, & R. N. for Champion.[2])—Miss K. Pelly, Theydon Place, Epping, Essex, for **Sadberge Marcus Coriolanus 1003**, born May 20, 1917, bred by Mrs. R. Pease, Sledwick, Barnard Castle: *s.* Sadberge Romulus 738, *d.* Sadberge Sparrow 327 *by* Bricket Llewellyn 112.

2008 II. (£2.)— The Hon. Mrs. Pomeroy, Greens Norton Court, Towcester, for **Edenbreck Klito 947**, born Feb. 27, 1916, bred by Mrs. Pickard, Edenbreck, Lancaster; *s.* Fenchurch Klito 801, *d.* Phyllis 946 *by* Sadberge Sunstroke 555.

Class 341.—*Male Goats, any other variety, over 2 years old.* [8 entries.]

2011 I. (£3, & Champion.[2])—Mrs. George Chetwode, Sevington Manor, Alresford, Hants, for **Grange Granite 2369**, born March 14, 1914, bred by M. E. Mitchell, Grange House Levenshulme, Manchester; *s.* Wigmore Topaz 2040, *d.* Hawthorne Granite 2256 *by* Holly Lodge Blue Granite 229.

2014 II. (£2.)—Miss Pope, Bashley Lodge, New Milton, Hants, for **Proud 2853**, Anglo-Nubian-Swiss, born May 1, 1917; *s.* Leazes Lucky Halton 2575, *d.* Pride 2499 *by* Champion Leazes Luck 1754.

2009 III. (£1.)—Countess Bathurst, Cirencester Park, Glos., for **Cicester Highlander 2603**, Anglo-Swiss, born April 4, 1916; *s.* Grange Granite 2369, *d.* Cirencester Favourite 2268 *by* Champion Leazes Luck 1754.

2010 R. N.—Baroness Burton, Dochfour, Inverness, for **Pytchley Abel.**
C.—2012.

Class 342.—*Male Goats, any variety, above 1 year, and not exceeding 2 years old.* [4 entries.]

2016 I. (£3.)—Miss Ballantine-Dykes, Rosemary Hill, Chilworth, Surrey, for **Pytchley Merry Tom**, Anglo-Nubian-Swiss, born March 9, 1918, bred by Mrs. Soames, St. Michael's Lodge, Bassett, Southampton; *s.* Performer 2552, *d.* Pytchley Merripen *by* Champion Leaze's Lucky Steyne 1839.

2019 II. (£2.)—Miss Pope, Bashley Lodge, New Milton, Hants, for **Edenstead Pluck 3007**, Anglo-Nubian-Swiss, born Jan. 25, 1918, bred by Miss Le Patoural, Edenstead; *s.* Edenstead Cross 2785, *d.* Wigmore Cornflower 1308 *by* Caper 10th.

2017 III. (£1.)—M. S. Bruce, Heatherdale, Stoke Bishop, Bristol, for **Garrochty Pioneer 1068**, Anglo-Nubian, born April 15, 1918, bred by Mrs. Macdonald, Garrochty, Keirgarth, Bute; *s.* Forest Murmurer 634, *d.* Forest Margot 771 *by* Wigmore Norman 562.

Class 343.—*Male Kids, any variety, not exceeding* 1 *year old.* [13 entries.]

2022A I. (£3.)—Mrs. Mabel Grace, Cranleigh, Beltinge Road, Herne Bay, for **Nash Midas 1132**, born July 2, 1918, bred by W. Horne, Nash Court, Westwell, Ashford; *s.* Edenbreck Midas 740, *d.* Nash Eva 856 *by* Champion Scriventon Budget 333.

2024 II. (£2.)—Miss K. Pelly, Theydon Place, Epping, Essex, for **Theydon Angus 1136**, Anglo-Nubian, born Feb. 22, 1919; *s.* Sadberge Marcus Coriolanus 1003, *d.* Regius Agunippe 895 *by* Wigmore Norman 562.

2021 III. (£1.)—Baroness Burton, Dochfour, Inverness, for **Dochfour Arrogance 3503**, born Feb. 16, 1919; *s.* Proud 2853, *d.* Rockcrest Mollie *by* Copthorne Nectarine 1648.

2028 IV. (10s.)—Miss Pope, Bashley Lodge, New Milton, Hants, for **Puck of Bashley 3605**, Anglo-Nubian-Swiss, born March 8, 1919; *s.* Edenstead Pluck 3007, *d.* Prude 2501 *by* Champion Leazes Luck 1754.
H. C.—2031.

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[1] £30 towards these Prizes were given by the British Goat Society.

[2] Challenge Certificate given by the British Goat Society for the best Male Goat in Classes 340-342.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 344.—*Female Goats, Anglo-Nubian, entered or eligible for entry in the Anglo-Nubian section of the Herd Book, over 2 years old.* [10 entries.]

2035 **I.** (£3, & R.N. for Champion.[1])—MRS. REGINALD PEASE, Sledwick, Barnard Castle, for **Sadberge Mavis** 817, born March 17, 1915, kidded May 20, 1919; *s.* Sadberge Romulus 738, *d.* Sadberge Phalerope 679 *by* Sedgemere Viking 556.

2033 **II.** (£2.)—MRS. REGINALD PEASE, for **Sadberge Brambling** 924, born May 6, 1916, kidded May 8, 1919; *s.* Sledwick Barnard 813, *d.* Bricket Beryl 622 *by* Bricket Viking 167.

2040 **III.** (£1.)—MRS. C. L. PICKARD, Middle Brow Top, Quernmore, Lancaster, for **Forest Minnikin** 591, born April 10, 1912, kidded March 23, 1919, bred by Miss Ethel Cane, Bishops Waltham, Chase, Hants.; *s.* Coxhill Noodle 526, *d.* Addington Myrtle 516 *by* Barton Blackrock 1227.

2032 **R. N.**—MISS VERA FLOOD-PAGE, Westwood, Normandy, Guildford, for **TRa Sunbeam** 847.

H. C.—2037. **C.**—2039.

Class 345.—*Female Goats, Swiss or Anglo-Swiss, over 2 years old.* [2 entries.]

2044 **I.** (£3.)—HERBERT E. HUGHES, "Goats," Broxbourne, Herts., for **Broxbourne Joan** 2351, Swiss, born March 29, 1914, kidded April 17, 1919; *s.* Sedgemere Paris 2nd 292, *d.* Broxbourne Beatrice 2080 *by* Cranmore 193.

2043 **II.** (£2.)—COUNTESS BATHURST, Cirencester Park, Glos., for **Cirencester Gem** 2421, Anglo-Swiss, born Feb. 22, 1915, kidded March 16, 1919; *s.* Champion Leaze's Luck 1754, *d.* Copthorne Sultana 1811 *by* Sedgemere Principio 1364.

Class 346.—*Female Goats, any other variety, over 2 years old.* [18 entries.]

2062 **I.** (£3) & Champion.[1])—MISS POPE, Bashley Lodge, New Milton, Hants, for **Progress** 2613, Anglo-Nubian-Swiss, born April 10, 1916, kidded April 15, 1919; *s.* Champion Broxbourne White Nugget 1999, *d.* Pride 2499 *by* Champion Leaze's Luck 1754.

2046 **II.** (£2.)—MISS A. AMICI-GROSSI, Tremedda, St. Ives, Cornwall, for **Tremedda Selene**, Anglo-Nubian-Swiss, born March 22, 1915, kidded March 3, 1919; *s.* Wigmore Topaz 2040, *d.* Tremedda Derna, *by* Young Milton of Tally Ho.

2045 **III.** (£1.)—MISS A. AMICI-GROSSI, for **Tremedda Lalage** 2522, Anglo-Nubian-Swiss, born April 5, 1915, kidded March 15, 1919; *s.* Wigmore Topaz 2040, *d.* Tremedda Erda 2692 *by* Champion Le Castor 240.

2063 **IV.** (10s.) MISS POPE, for **Prude** 2501, Anglo-Nubian-Swiss, born Feb. 22, 1915, kidded March 8, 1919; *s.* Champion Leaze's Luck 1754, *d.* Broxbourne Dorothy 1581 *by* Adam 1190.

H. C.—2058, 2064. **C.**—2049, 2051, 2054.

Class 347.—*Goatlings, Anglo-Nubian, entered or eligible for entry in the Anglo-Nubian section of the Herd Book, above* 1 *year and not exceeding* 2 *years old.* [6 entries.]

2068 **I.** (£3, & R. N. for Champion.[2])—MISS K. PELLY, Theydon Place, Epping, Essex, for **Theydon Mona** 1036, born Dec. 31, 1917; *s.* Edenbreck Klito 947, *d.* Theydon Myrtle 909 *by* Sedgemere Georgius 689.

2066 **II.** (£2.)—REGINALD PEASE, Sledwick, Barnard Castle, for **Sledwick Crocus** 1109, born May 17, 1918; *s.* Sadberge Florianus 934, *d.* Sledwick Matilda 814 *by* Sadberge Berserker 678.

2065 **III.** (£1.)—MRS. REGINALD PEASE, Sledwick, Barnard Castle, for **Sadberge Shuffle Wing** 1077, born April 7, 1918; *s.* Sadberge Romulus 738, *d.* Sadberge Sparrow 327 *by* Bricket Llewellyn 112.

2069 **R. N.**—THE HON. MRS. POMEROY, Greens Norton Court, Towcester, for **Towcester Mermaid.**

H. C.—2070.

Class 348.—*Goatlings, any other variety, above* 1 *year and not exceeding* 2 *years old.* [12 entries.]

2080 **I.** (£3, & Champion.[2])—MISS POPE, Bashley Lodge, New Milton, Hants, for **Promise of Bashley** 3705, Anglo-Nubian-Swiss, born March 7, 1918; *s.* Proud 2853, *d.* Progress 2613 *by* Champion Broxbourne White Nugget 1999.

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[1] Challenge Certificate given by the British Goat Society for the best Female Goat that has borne a Kid in Classes 344-346.

[2] Bronze Medal given by the British Goat Society for the best Goatling in Classes 347 and 348.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

2075 II. (£2.)—LORD DEWAR, Homestall, East Grinstead, for **Homestall Rosalind** 3089, Anglo-Nubian-Swiss, born March 26, 1918; *s.* Cadby Dictator 2656, *d.* Copthorne Lemon 1810 *by* Sedgemere Principio 1365.

2081 III. (£1.)—E. A. WALMISLEY, The Manor House, Burstow, Horley, Surrey, for **Atherstone Faith** 3338, Anglo-Nubian-Swiss, born May 3, 1918; *s.* Grange Granite 2369, *d.* Buckholt Francesca 2658 *by* Woodfall's Francis 2332.

2073 R. N.—MISS C. CHAMBERLAIN, Westons, Lyndhurst, Hants, for **Prelude of Bashley.**

H. C.—2071. C.—2082.

Class 349.—*Female Kids, Anglo-Nubian, entered or eligible for entry in the Anglo-Nubian section of the Herd Book, not exceeding* 1 *year old.* [5 entries.]

2084 I. (£3, & Champion.[1])—MISS K. PELLY, Theydon Place, Epping, Essex, for **Theydon Marcella** 1139, born Feb. 8, 1919; *s.* Sadberge Marcus Coriolanus 1003, *d.* Theydon Myrtle 909 *by* Sedgemere Georgius 689.

2083 II. (£2.)—MRS. REGINALD PEASE, Sledwick, Barnard Castle, for **Sadberge Kestrel** 6104, born Aug. 4, 1918; *s.* Sadberge Caligula 921, *d.* Sadberge Buzzard 923 *by* Sledwick Barnard 813.

2085 III. (£1.)—MISS K. PELLY, for **Theydon Treasure** 1191, born April 10, 1919; *s.* Sadberge Marcus Coriolanus 1003, *d.* Edenbreck Thyme 995 *by* Edenbreck Marcus 933.

2086 R. N.—MRS. C. L. PICKARD, Middle Brow Top, Quernmore, Lancaster, for **Edenbreck Martha.**

Class 350.—*Female Kids, any other variety, not exceeding* 1 *year old.* [8 entries.]

2090 I. (£3, & R. N. for Champion.[1])—MISS C. CHAMBERLAIN, Westons, Lyndhurst, Hants, for **Patience of Westons**, Anglo-Nubian-Swiss, born Jan. 30, 1919; *s.* Proud 2853, *d.* Hilma *by* Stockwell Grange.

2093 II. (£2.)—MESDAMES HUNTER & SOAMES, Point-out Farm, Bassett, Southampton, for **Pytchley Clara** 3528, Anglo-Nubian-Swiss, born Feb. 19, 1919; *s.* Proud 2853, *d.* Mayfield Carmen 2538 *by* Cherub.

2095 III. (£1).—E. A. WALMISLEY, The Manor House, Burstow, Horley, Surrey, for **Atherstone Crystal**, Anglo-Nubian-Swiss, born March 2, 1919; *s.* Proud 2853, *d.* Buckholt Linden 2872 *by* Withdean Ajax 2314.

2094 R. N.—MISS POPE, Bashley Lodge, New Milton, Hants, for **Patience of Bashley.**

C.—2091.

Milk Yield Prizes.

Open to Goats entered in Classes 344-346 *only.*

Class 351.—*Goats that have previously won a* 1*st*, 2*nd or* 3*rd Prize in any Milking Competition.* [4 entries.]

2062 I. (£3.)—MISS POPE, for **Progress.** (See Class 346.)

2051 II. (£2.)—HERBERT E. HUGHES, "Goats," Broxbourne, Herts., for **Broxbourne Fairy Queen**, Swiss, born Feb. 24, 1910, kidded Feb. 25, 1918; *s.* Broxbourne Togette, *d.* Broxbourne Marjorie *by* Champion Broxbourne White Nugget 1999.

2040 III. (£1, & Champion.[2])—MRS. C. L. PICKARD, for **Forest Minnikin.** (See Class 344.)

Class 352.—*Goats, not eligible for Class* 351. [17 entries.]

2046 I. (£3, & Champion.[3])—MISS AMICI-GROSSI, for **Tremedda Salene.** (See Class 346.)

2045 II. (£2.)—MISS AMICI-GROSSI, for **Tremedda Lalage.** (See Class 346.)

2063 III. (£1.)—MISS POPE, for **Prude.** (See Class 346.)

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[1] Bronze Medal given by the British Goat Society for the best Kid in Classes 349 and 350.

[2] The "Pomeroy" Challenge Cup given by the British Goat Society for the best Anglo-Nubian entered in the Anglo-Nubian section of the Herd Book winning the highest number of points in the Milking Classes.

[3] The "Dewar" Twenty-Guinea Challenge Trophy given by the British Goat Society for the Goat entered in either the General or Toggenburg section of the Herd Book winning the highest number of points in the Milking Classes.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

PIGS.

Large Whites.

Class 353.—*Large White Boars, farrowed in or before* 1917. [9 entries.]

2097 I. (£10, Champion,[1] & R.N. for Champion.[2])—SIR GILBERT GREENALL, BT., C.V.O., Walton Hall, Warrington, for **Worsley Jay 35th** 20419, born Jan. 26, 1915; *s.* Jay of Worsley 12th 16143, *d.* Worsley Lady 10th 39620 *by* Worsley Emperor 38th 15479.

2099 II. (£5, & R.N. for Champion.[1])—ROWLAND P. HAYNES, Delves Green Farm, Wednesbury, Staffs., for **Kitchener of Caldmore** 22553, born May 6, 1916, bred by A. W. White, Hillegom, Spalding; *s.* Kitchener 20083, *d.* Spalding Duchess 4th 42070 *by* Spalding Senator 16325.

2096 III. (£3.)—CHIVERS & SONS, LTD., Histon, Cambridge, for **Histon Lion Heart** 22481, born Feb. 2, 1917; *s.* Caldmore Cœur de Lion 19873, *d.* Fen Princess 41256 *by* That's 'Im 15343.

2104 R. N.—EDMUND WHERRY, Bourne, Lincs., for **Bourne Bar None.**
H. C.—2098.

Class 354.—*Large White Boars, farrowed in* 1918, *before July* 1.[3] [5 entries.]

2109 I. (£10.)—EDMUND WHERRY, Bourne, Lincs., for **Bourne Bar None 33rd** 23549, born April 1; *s.* Bourne Bar None 20847, *d.* Bourne Beatrice 21st 34862 *by* Bourne Banner 13305.

2107 II. (£5.)—SIR GILBERT GREENALL, BT., C.V.O., Walton Hall, Warrington, for **Spalding Banner** 24511, born March 9, bred by Alfred W. White, Hillegom, Spalding; *s.* Banner of Spalding 21987, *d.* Spalding Queen Mary 2nd 50502 *by* Turk of Rayton 16393.

2106 III. (£3.)—SIR GILBERT GREENALL, BT., C.V.O., for **Sapperton Boy** 24471, born Feb. 4, bred by Cecil Rudkin, Sapperton Farm, Folkingham, Lincs.; *s.* Ramsey Boy 22659, *d.* Sapperton War Sister 44188 *by* Grantham John 18689.

2105 R. N.—A. B. EDWARDS, Brewery House, Harlow, Essex, for **Bushes Victor.**

Class 355.—*Large White Boars, farrowed in* 1918, *on or after July* 1.[3] [11 entries.]

2112 I. (£10.)—SIR GILBERT GREENALL, BT., C.V.O., Walton Hall, Warrington, for **Emperor of Worsley 11th**, born July 12, bred by Richard Bourne, Cholmondeley, Malpas; *s.* Longfellow of Helsby 22455, *d.* Cholmondeley Duchesse (vol. 35) *by* Hercules of Cholmondeley 21123.

2114 II. (£5.)—ROWLAND P. HAYNES, Delves Green Farm, Wednesbury, Staffs., for **Kitchener of Caldmore 3rd**, born July 7, bred by the late Walsall War Piggeries, Ltd., Walsall: *s.* Kitchener of Caldmore 22553, *d.* Histon Topsy 44452 *by* Weston Volunteer 17855.

2110 III. (£3.)—CHIVERS & SONS, LTD., Histon, Cambridge, for **Histon Snowman 2nd**, born July 3; *s.* Irresistible 21137, *d.* Early Snowdrop 49466 *by* Spy of Sundon 19099.

2115 R. N.—ROWLAND P. HAYNES, for **Kitchener of Caldmore 4th.**

Class 356.—*Large White Boars, farrowed in* 1919. [10 entries.]

2122 I. (£10), & 2123 II. (£5.)—DANIEL R. DAYBELL, Bottesford, Nottingham, for boars, born Jan. 9; *s.* Worsley Turk 95th 22971, *d.* Bottesford Buttercup 4th 40638 *by* Mollington Jay of Bottesford 10965.

2130 III. (£3.)—EDMUND WHERRY, Bourne, Lincs., for boar, born Jan. 4; *s.* Bourne Big Ben 22 07, *d.* Bourne Buttercup 2nd 43814 *by* Bourne Banger 2nd 17111.

2127 R. N.—JOHN NEAVERSON, The Chestnutts, Peakirk, Peterborough.
H. C.—2128.

Class 357.—*Large White Breeding Sows, farrowed in or before* 1917. [8 entries.]

2137 I. (£10, Champion,[2] & Champion.[4])—EDMUND WHERRY, Bourne, Lincs., for **Dalmeny Monetta** 49410, born Jan. 4, 1917, farrowed Jan. 9, bred by the Earl of Rosebery, K.G., K.T., Dalmeny, Edinburgh; *s.* Jellico 18803, *d.* Dalmeny Montano 44104 *by* Billikan of Bourne 17029.

2132 II. (£5.)—SIR GILBERT GREENALL, BT., C.V.O., Walton Hall, Warrington, for **Worsley Lady 20th** 48078, born Aug. 28, 1915, farrowed Jan. 10; *s.* Ringleader of Bottesford 17621, *d.* Worsley Lady 7th 36550 *by* Worsley Turk 43rd 14323.

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[1] Champion Gold Medal given by the National Pig Breeders' Association for the best Boar in Classes 353-356.

[2] Silver Challenge Cup, value Twenty-five Guineas, given by the National Pig Breeders' Association for the best Large White Pig in Classes 353-359.

[3] Prizes given by the National Pig Breeders' Association.

[4] Champion Gold Medal given by the National Pig Breeders' Association for the best Sow in Classes 357-359.

Unless otherwise stated, each prize animal named below was "bred by exhibtior."]

2131 III. (£3.)—CHIVERS & SONS, LTD., Histon, Cambridge, for **J. B. C. 44516**, born Feb. 8, 1914 farrowed Jan. 8; *s.* J.B. of Histon 2nd 16139, *d.* Carnarthen 34978 *by* Northern Emperor 9th 16223.

2134 R.N.—ROWLAND P. HAYNES, Delves Green Farm, Wednesbury, Staffs., for **Caldmore Miss Hollingsworth.**

H. C.—2133.

Class 358.—*Large White Sows, farrowed in* 1918, *before July* 1. [13 entries.]

2142 I. (£10, & R. N. for Champion.[1])—SIR GILBERT GREENALL, BT., C.V.O., Walton Hall, Warrington, for **Worsley Queen 73rd 55884**, born Jan. 4; *s.* Banner of Spalding 21987, *d.* Queen of Worsley 11th 50330 *by* Turk of Rayton 16393.

2151 II. (£5.)—EDMUND WHERRY, Bourne, for **Bourne Queen Anne 52772**, born Jan. 7; *s.* Emperor of Pinchbeck 21077, *d.* Queen Anne of Pinchbeck 47548 *by* That's 'Im of Worsley 119095.

2150 III. (£3.)—EDMUND WHERRY, for **Bourne Bouquet 9th 52702**, born Jan. 1; *s.* Bourne Bar None 20847, *d.* Bouquet of Bourne 37698 *by* Pode Hole Eclipse 16253.

2141 R. N.—A. B. EDWARDS, Brewery House, Harlow, Essex, for **Bushes Amy 4th.**

H. C.—2144.

Class 359.—*Large White Sows, farrowed in* 1918, *on or after July* 1. [14 entries.]

2153 I. (£10.)—JOHN FILLINGHAM, The George Hotel, Grantham, for **Grantham Gay Lady II.**, born July 2: *s.* Gunner of Grantham 21119, *d.* Grantham Betsie 47034 *by* Chieftain of Grantham 18521.

2155 II. (£5.)—JOHN FILLINGHAM, for **Grantham Grand Lady**, born July 2: *s.* Gunner of Grantham 21119, *d.* Grantham Betsie 47034 *by* Chieftain of Grantham 18521.

2156 III. (£3.)—SIR GILBERT GREENALL, BT., C.V.O., Walton Hall, Warrington, for **Worsley Duchess 57 55828**, born July 3: *s.* Jay of Worsley 14th 16147, *d.* Worsley Duchess 32nd 33616 *by* Emperor of Worsley 10791.

2165 R. N.—EDMUND WHERRY, Bourne, for **Bourne Buttercup 79th.**

H. C.—2157, 2163.

Class 360.—*Three Large White Sows, farrowed in* 1919. [5 entries.]

2167 I. (£10.)—SIR GILBERT GREENALL, BT., C.V.O., Walton Hall, Warrington, for sows, born Jan. 2: *s.* Turk of Belton 21411, *d.* Cholmondeley Fairy 7th 46550 *by* Worsley Turk 72nd 20433.

2168 II. (£5), & 2169 R. N.—JOHN NEAVERSON, The Chestnutts, Peakirk, Peterborough, for sows, born Jan. 2: *s.* Old George 22631, *d.* Magdaline of Pinchbeck 1st 44588 *by* Worsley Turk 68th 16615.

2166 III. (£3.)—DANIEL R. DAYBELL, Bottesford, Nottingham, for sows, born Jan. 9; *s.* Worsley Turk 95th 22971, *d.* Bottesford Buttercup 4th 40638 *by* Mollington Jay of Bottesford 10965.

Middle Whites.

Class 361.—*Middle White Boars, farrowed in or before* 1917. [6 entries.]

2171 I. (£10, Champion,[2] & Champion.[3])—JOHN CHIVERS, Wychfield, Cambridge, for **Shrewsbury 19511**, born Jan. 27, 1914 bred by H. R. Beeton, Hammonds, Checkendon, Reading; *s.* Wilton of Pendley 15711, *d.* Hammond's Salonica 36918 *by* Hammond's Hardware 15625.

2173 II. (£5.)—W. B. HILL, Vauxhall, Scotlands, Wolverhampton, for **Prestwood Acrobat 1st 23197**, born Jan. 4, 1916; *s.* Acrobat of Prestwood 20445, *d.* Pattu of Prestwood 36962 *by* Banker of Castlecroft 12995.

2175 III. (£3.)—LEOPOLD C. PAGET, Middlethorpe Hall, York, for **Preserver of Wharfedale**, born July 30, 1917, bred by John Chivers, Histon, Cambridge: *s.* Shrewsbury 19511, *d.* Holywell Harthay Perfection 39974 *by* Sefton of Holywell 14465.

2176 R. N.—C. & E. STEPHENSON, Burton House, Stafford, for **Prestonian of Helsby.**

H. C.—2174.

Class 362.—*Middle White Boars, farrowed in* 1918.[4] [10 entries.]

2178 I. (£10, & R. N. for Champion.[2])—JOHN CHIVERS, Wychfield, Cambridge, for **Histon Shrewsbury 2nd**, born Feb. 5; *s.* Shrewsbury 19511, *d.* Welcome Histon 51900 *by* Sundon Scott 20599.

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[1] Champion Gold Medal given by the National Pig Breeders' Association for the best Sow in Classes 357-359.

[2] Champion Gold Medal given by the National Pig Breeders' Association for the best Boar in Classes 361-363.

[3] Silver Challenge Cup, value Twenty-five Guineas, given by the National Pig Breeders' Association for the best Middle White Pig in Classes 361-365.

[4] Prizes given by the National Pig Breeders' Association.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

2180 II. (£5.)—W. B. HILL, Vauxhall, Scotlands, Wolverhampton, for **Scotty of Prestwood** 25533, born March 9, bred by Col. H. P. Sykes, Newport, Salop; *s.* Scotty 25531, *d.* Albany Snowflake 2nd 48126 *by* Wharfedale Surprise 20629.

2183 III. (£3.)—LEOPOLD C. PAGET, Middlethorpe Hall, York, for **Wharfedale Marvel**, born Jan. 6; *s.* Wharfedale Corporal 19539, *d.* Mascot of Wharfedale 48500 *by* Cow Boy 20489.

2186 R. N.—C. & E. STEPHENSON, Burton House, Stafford, for **Rickerscote Juggler.**
H. C.—2177. C.—2182, 2184, 2185.

Class 363.—*Middle White Boars, farrowed in* 1919. [2 entries.]

2188 I. (£10.)—LEOPOLD C. PAGET, Middlethorpe Hall, York, for boar, born Jan. 3; *s.* Wharfedale Resistance, *d.* Wharfedale Sparkling 51976 *by* Dividend of Wharfedale 20155.

2187 II. (£5.)—JOHN CHIVERS, Wychfield, Cambridge, for **Histon Woodman**, born Jan. 3; *s.* Sundon Shrewsbury 23243, *d.* Lady Woodlands *by* Sundon Scott 20599.

Class 364.—*Middle White Breeding Sows, farrowed in or before* 1917. [8 entries.]

2192 I. (£10, R.N. for Champion,[1] & Champion.[2])—LEOPOLD C. PAGET, Middlethorpe Hall, York, for **Midlothian Robina** 51666, born Jan. 6, 1917, bred by the Earl of Rosebery, K.G., Dalmeny House, Edinburgh; *s.* Cowboy 20489, *d.* Midlothian Rose 43058 *by* Actor of Hatchfield 16693.

2189 II. (£5.)—JOHN CHIVERS, Wychfield, Cambridge, for **Histon Choice 2nd**, born March 1, 1917; *s.* Durbar of Histon 21679, *d.* Rose of Croxteth 40076 *by* Blythe Reveller 15575.

2190 III. (£3.)—JOHN CHIVERS, for **Pendley Joyce** 51756, born April 20, 1917, bred by J. G. Williams, Tring; *s.* Castlecroft Jonathan 20469, *d.* Wharfedale Joyce 43272 *by* Earl of Wharfedale 16719.

2195 R. N.—C. & E. STEPHENSON, Burton House, Stafford, for **Prestwood Pansy 3rd.**
H. C.—2191, 2193, 2194. C.—2196.

Class 365.—*Middle White Sows, farrowed in* 1918. [13 entries.]

2200 I. (£10, & R.N. for Champion.[2])—W. B. HILL, Vauxhall, Scotlands, Wolverhampton, for **Prestwood Joan 17th** 57146, born Jan. 1; *s.* Prestwood Acrobat 1st 23197, *d.* Prestwood Joan 15th 45794 *by* Clumbers of Prestwood 20485.

2198 II. (£5.)—JOHN CHIVERS, Wychfield, Cambridge, for **Histon Peerless 3rd**, born Jan. 24; *s.* Histon Repeater 23119, *d.* Holywell Harthay Perfection 39974 *by* Sefton of Holywell 14465.

2205 III. (£3.)—LEOPOLD C. PAGET, Middlethorpe Hall, York, for **Wharfedale Relief**, born Jan. 2; *s.* Croxteth Banker 4th 20503, *d.* Wharfedale Amazon 2nd 48614 *by* Wharfedale Corporal 19539.

2202 R. N.—G. V. MANWARING, Lingfield Lodge, Edenbridge, for **Queen of Edenbridge.**
H. C.—2199, 2201. C.—2204, 2207.

Class 366.—*Three Middle White Sows, farrowed in* 1919. [1 entry.]

2210 I. (£10.)—LEOPOLD C. PAGET, Middlethorpe Hall, York, for sows, born Jan. 3 and 7; *ss.* Wharfedale Resistance and Wharfedale Resolution, *ds.* Wharfedale Sparkling 51976 *by* Dividend of Wharfedale 20511, Wharfedale Adventuress 2nd 51904 *by* Wharfedale Irresistible 21815.

Tamworths.

Class 367.—*Tamworth Boars, farrowed in or before* 1917. [3 entries.]

2212 I. (£10, & R. N. for Champion.[3])—ROBERT IBBOTSON, Knowle, Dorridge, Birmingham, for **Knowle Sunstar**, born Feb. 20, 1917; *s.* Knowle General Joffre 20655, *d.* Knowle Madeline 11th 46010 *by* Sunstar 18269.

2213 II. (£5.)—J. L. & A. RILEY, Putley, Ledbury, Herefordshire, for **Choice of Putley**, born March 15, 1917, bred by R. Ibbotson, The Hawthorns, Knowle, Warwickshire; *s.* Kerr's Choice 19593, *d.* Queen Mary 43450 *by* Knowle Lottery 18241.

Class 368.—*Tamworth Boars, farrowed in* 1918.[4] [5 entries.]

2215 I. (£10.)—ROBERT IBBOTSON, Knowle, Dorridge, Birmingham, for boar, born Sept. 20; *s.* Knowle Mountaineer 3rd 23333, *d.* Knowle Model 10th 52048 *by* Knowle Arundel 21855.

2216 II. (£5.)—ROBERT IBBOTSON, for boar, born March 9, bred by Col. J. A. Morrison, Basildon Park, Reading; *s.* Brodsworth Able 23311, *d.* Knowle Modula 46040 *by* Sunstar 18269.

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[1] Silver Challenge Cup, value Twenty-five Guineas, given by the National Pig Breeders' Association for the best Middle White Pig in Classes 361-365.

[2] Champion Gold Medal given by the National Pig Breeders' Association for the best Sow in Classes 364 and 365.

[3] Champion Gold Medal given by the National Pig Breeders' Association for the best Boar in Classes 367-369.

[4] Prizes given by the National Pig Breeders' Association.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

2214 III. (£3.)—EGBERT DE HAMEL, Middleton Hall, Tamworth, for **Middleton Malkha**, born April 5; *s.* Mancunium of Middleton 23341, *d.* Middleton Malone 52068 *by* Putley Chaplain 15831.

2217 R. N.—ROBERT IBBOTSON, for **Basildon Arthur.**

Class 369.—*Tamworth Boars, farrowed in* 1919. [5 entries.]

2220 I. (£10, & Champion.[1]), & 2221 II. (£5.)—JAMES S. HEPBURN, South Farm, Arbury, Nuneaton, for boars, born Jan. 10, bred by Sir Francis A. N. Newdegate, K.C.M.G., Arbury Hall, Nuneaton; *s.* Arbury Kinlock, *d.* Osmaston Aralea 46070 *by* Elford Bishop 13175.

2219 III. (£3.)—EGBERT DE HAMEL, Middleton Hall, Tamworth, for boar, born Jan. 2; *s.* Mitcheldene of Middleton 23343, *d.* Middleton Malone 52068 *by* Putley Chaplain 15831.

2222 R. N.—ROBERT IBBOTSON, Knowle, Dorridge, Birmingham.

Class 370.—*Tamworth Breeding Sows, farrowed in or before* 1917. [4 entries.]

2225 I. (£10, Champion,[2] & Champion.[3])—ROBERT IBBOTSON, Knowle, Dorridge, Birmingham, for **Knowle Madeline 15th** 48710, born Jan. 17, 1916; *s.* Knowle Macqueen 3rd 18247, *d.* Knowle Madeline 4th 40266 *by* Knowle Professor 15793.

2226 II. (£5, R. N. for Champion,[2] & R.N. for Champion[3].)—ROBERT IBBOTSON, for **Knowle Modula** 46040, born March 3, 1915; *s.* Sunstar 18269, *d.* Knowle Model 2nd 40276 *by* Osmaston Buxus 14633.

2224 III. (£3.)—ROBERT IBBOTSON, for **Knowle Lady Beatrice** 43366, born July 2, 1914; *s.* Osmaston Buxus 14633, *d.* Knowle Empress Queen 31164 *by* Knowle Lord Minto 12191.

Class 371.—*Tamworth Sows, farrowed in* 1918. [5 entries.]

2229 I. (£10)—ROBERT IBBOTSON, Knowle, Dorridge, Birmingham, for sow, born July 8, bred by the late Charles Thellusson, Brodsworth Park, Doncaster; *s.* Percy of Brodsworth 21909, *d.* Brodsworth Content 2nd 48678 *by* Dick of Brodsworth 18195.

2230 II. (£5.)—ROBERT IBBOTSON, for sow, born July 11, bred by the late Charles Thellusson, Brodsworth Park, Doncaster; *s.* Percy of Brodsworth 21909, *d.* Brodsworth Content 5th 52022 *by* Boxley Abel 19627.

2228 III. (£3.)—ROBERT IBBOTSON, for **Basildon Model**, born March 9, bred by Col. J. A. Morrison, Basildon Park, Reading; *s.* Brodsworth Abel 23311, *d.* Knowle Modula 46040 *by* Sunstar 18269.

Class 372.—*Three Tamworth Sows, farrowed in* 1919. [4 entries.]

2234 I. (£10.)—JAMES S. HEPBURN, South Farm, Arbury, Nuneaton, for sows, born Jan. 10, bred by Sir Francis A. N. Newdegate, K.C.M.G., Arbury Hall, Nuneaton; *s.* Arbury Kinlock, *d.* Osmaston Aralea 46070 *by* Elford Bishop 13175.

2235 II. (£5.)—ROBERT IBBOTSON, Knowle, Dorridge, Birmingham, for sows, born Feb. 2; *s.* Knowle Clipper, *d.* Arbury 4592; *by* Knowle Ambition 18219.

2233 III. (£3.)—EGBERT DE HAMEL, Middleton Hall, Tamworth, for sows, born Jan. 2; *s.* Mitcheldene of Middleton 23343, *d.* Middleton Malone 52068 *by* Putley Chaplain 15831.

Berkshires.

Class 373.—*Berkshire Boars, farrowed in or before* 1917. [5 entries.]

2237 I. (£10, Champion,[4] & Champion.[5])—H. R. BEETON, Hammonds Farm, Checkendon, Reading, for **Carry On**, born Sept. 2, 1917, bred by J. H. Ismay, Iwerne Minster, Blandford; *s.* Hurry On 19635, *d.* Iwerne Megan 19637 *by* Iwerne Lad 2nd 18971.

2240 II. (£5.)—W. HOWARD PALMER, Stokes Farm, Wokingham, Berks., for **Minley King** 18364, born April 6, 1914, bred by L. Currie, Minley Manor, Farnborough, Hants; *s.* Minley Manor 15982, *d.* Enham Waxdoll 16149 *by* Sir Peter H. 13251.

2241 III. (£3.)—W. HOWARD PALMER, for **Murrell Prince** 20332, born June 29, 1917; *s.* Minley King 18364, *d.* Murrell Primrose 19580 *by* Whitley Longfellow 18699.

2238 R. N.—GILBERT CULLEY, Jamaica Farm, St. Mary Bourne, Andover, for **Noble Hector.**

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[1] Champion Gold Medal given by the National Pig Breeders' Association for the best Boar in Classes 367-369.

[2] Silver Challenge Cup, value Twenty-five Guineas, given by the National Pig-Breeders' Association for the best Tamworth Pig in Classes 367-371.

[3] Champion Gold Medal given by the National Pig Breeders' Association for the best Sow in Classes 370 and 371.

[4] Champion Prize of £10 10*s.* given by the British Berkshire Society for the best Boar or Sow in Classes 373-377.

[5] Champion Prize of £10 given through the British Berkshire Society for the best Boar in Classes 373-375.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 374.—*Berkshire Boars, farrowed in* 1918.[1] [9 entries.]

2244 I. (£10, & R. N. for Champion.[2])—JAMES H. ISMAY, Iwerne Minster, Blandford, Dorset, for **Jamaica Warrior** 20573, born April 7, bred by Gilbert Culley, St. Mary Bourne, Hants; *s.* Moundsmere Warrior 17564, *d.* Moundsmere Maggie 18327 *by* Express B 17189.

2245 II. (£5.)—MRS. JERVOISE, Herriard Park, Basingstoke, Hants, for **Swinton Cognac**, born April 15, bred by John A. Kay, Ravencroft, Middlewich; *s.* Loving Cup 19318, *d.* Swinton Molly 19750 *by* Manor Palinira 17356.

2250 III. (£3.)—JAMES PEART, LTD., Wood Hall, Hatfield, Herts, for **Murrell Sam** 20419, born April 18, bred by W. Howard Palmer, Heathlands, Wokingham; *s.* Winton Duke 19742, *d.* Winton Snowdrop 21099 *by* Iwerne Hare Hill 1969.

2243 R. N.—JULIUS FRICKER, Suddon Grange, Wincanton, Somerset.
C.—2242.

Class 375.—*Berkshire Boars, farrowed in* 1919. [8 entries.]

2253 I. (£10.)—JAMES H. ISMAY, Iwerne Minster, Blandford, Dorset, for boar, born Jan. 10; *s.* Hurry On 19635, *d.* Iwerne Miss Minster 18975 *by* Iwerne Copper 17715.

2251 II. (£5.)—JULIUS FRICKER, Suddon Grange, Wincanton, Somerset, for boar, born Jan. 26; *s.* Robert 2nd 20227, *d.* Suddon Surprise 15434 *by* Fightable F.B. 11246.

2257 III. (£3.)—W. HOWARD PALMER, Stokes Farm, Wokingham, Berks, for **Murrell Maker** 21240, born Jan. 5; *s.* Minley King 18364, *d.* Murrell Mirian 19971 *by* Murrell King 19579.

2258 R. N.—W. HOWARD PALMER, for **Murrell Mike.**
C.—2256.

Class 376.—*Berkshire Breeding Sows, farrowed in or before* 1917. [8 entries.]

2263 I. (£10, & R. N. for Champion.[3])—W. HOWARD PALMER, Stokes Farm, Wokingham, Berks, for **Murrell Betka** 19973, born March 4, 1917, farrowed Jan. 2; *s.* Murrell King 19579, *d.* Moundsmere Betka 16676 *by* Oxford Viscount 15008.

2260 II. (£5.)—MRS. JERVOISE, Herriard Park, Basingstoke, Hants, for **Moundsmere Kernel 8th** 19083, born April 15, 1915, farrowed Dec. 5, bred by W. Buckley, Moundsmere, Basingstoke; *s.* Express B 17189, *d.* Moundsmere Kernel 2nd 17437 *by* Moundsmere Curious 16522.

2259 III. (£3.)—JAMES H. ISMAY, Iwerne Minster, Blandford, for **Compton Guest** 20188, born March 8, 1917, farrowed Jan. 2, bred by H. Vincent, Waterstone, Dorchester; *s.* Manor Baronet 18978, *d.* Compton Gussie 17842 *by* Herrison Lad 16937.

2264 R. N.——W. HOWARD PALMER, for **Murrell Miriam.**
C.—2265.

Class 377.—*Berkshire Sows, farrowed in* 1918. [16 entries.]

2273 I. (£10, R.N. for Champion,[4] & Champion.[3])—JAMES H. ISMAY, Iwerne Minster, Blandford, Dorset, for **Jamaica Wave** 20576, born April 7, bred by G. Culley, St. Mary Bourne, Hants; *s.* Moundsmere Warrior 17564, *d.* Moundsmere Maggie 18327 *by* Express B 17189.

2272 II. (£5.)—JAMES H. ISMAY, for **Jamaica the Wren** 20577, born April 7, bred by G. Culley, St. Mary Bourne, Hants; *s.* Moundsmere Warrior 17564, *d.* Moundsmere Maggie 18327 *by* Express B 17189.

2281 III. (£3.)—W. HOWARD PALMER, Stokes Farm, Wokingham, Berks, for **Murrell Pearl** 20640, born Jan. 30; *s.* Minley King 18364, *d.* Murrell Primrose 19580 *by* Whitley Longfellow 18699

2270 R. N.—A. HENDERSON BISHOP, Thornton Hall, Thorntonhall Station, Glagow, for **Suddon Nora.**
C.—2282.

Class 378.—*Three Berkshire Sows, farrowed in* 1919. [3 entries.]

2284 I. (£10.)—W. HOWARD PALMER, Stokes Farm, Wokingham, Berks, for sows, born March 13; *s.* Whitley Shylock 19302, *d.* Murrell Beauty 20637 *by* Minley King 18364.

Cup.[5]—JAMES H. ISMAY, Iwerne Minster, Blandford, Dorset.

R. N. for Cup.[5]—W. HOWARD PALMER, Stokes Farm, Wokingham, Berks.

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[1] Prizes given by the British Berkshire Society.

[2] Champion Prize of £10 given through the British Berkshire Society for the best Boar in Classes 373-375.

[3] Champion Prize of £10 given through the British Berkshire Society for the best Sow in Classes 376 and 377.

[4] Champion Prize of £10 10*s.* given by the British Berkshire Society for the best Boar or Sow in Classes 373-377.

[5] The "Berkshire" Silver Challenge Cup, value £20, given by the British Berkshire Society for the most points awarded in a combination of entries in Classes 373-378 on the basis of:—Four points for a first prize, three points for a second prize, two points for a third prize, one point for a fourth prize, two points for a Championship, and one point for a Reserve for a Championship.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Large Blacks.

Class 379.—*Large Black Boars, farrowed in or before* 1917. [6 entries.]

2288 I. (£10, & Champion.[1])—TERAH F. HOOLEY, Dry Drayton, Cambridge, for **Bassingbourn Cliff** 6337, born Jan. 31, 1916, bred by A. Playle, Bassingbourn, Cambs.: *s.* Royal Sovereign 4593, *d.* Bassingbourn Lassie 11134 *by* Sudbourne Sutler 3325.

2290 II. (£5.)—STANLEY A. STIMPSON, Bixley, Norwich, for **Swardeston That's Him** 7347, born June 8, 1917, bred by A. Beverley Ringer, Swardeston, Norwich: *s.* Cleeve Perfection 5801, *d.* Treveglos Moonlight 17854 *by* Valley Treveglos That's Him 4579.

2291 III. (£3.)—W. WILLS, Marlwood, Thornbury, Glos., for **Lustleigh Royalty** 9277 born Oct. 20, 1917: *s.* Sudbourne Lordship 5859, *d.* Lustleigh Marchioness 24th 13018 *by* Drayton Dandy 3331.

2287 R. N.—S. F. EDGE, Gallops Homestead, Ditchling, Sussex, for **Vahan Perfection.**

Class 380.—*Large Black Boars, farrowed in* 1918.[2] [16 entries.]

2297 I. (£10.)—TERAH F. HOOLEY, Dry Drayton, Cambridge, for **Bassingbourn Mandarin** 8893, born Jan. 26, bred by A. Playle, Bassingbourn, Cambs.; *s.* Cleave General 6367, *d.* Bassingbourn Maid 2 14472 *by* Bassingbourn Duke 3607.

2294 II. (£5.)—S. F. EDGE, Gallops Homestead, Ditchling, Sussex, for **Vahan Level Wonder** 9061, born July 25: *s.* Cornwood Vahan Wonder 7185, *d.* Vahan Nancy 19316 *by* Trevisquite Guido 5557.

2303 III. (£3.)—JOHN C. OLVER, Woodland Valley, Ladock, Cornwall, for **Valley Up-to-Date** 9113, born March 22; *s.* Treveglos Marksman 7761, *d.* Queen of the Valley 14th 19640 *by* Valley Model 4971.

2296 IV. (£2.)—G. A. GOODCHILD, Oak House, Great Yeldham, Essex, for boar, born July 9; *s.* Trevisquite Masterpiece 6425, *d.* Tartar Jim 9th 17526 *by* Kibbear John 1st 5391.

2304 R. N.—W. S. WARD, Menna Farm, Grampound Road, Cornwall, for **Menna Squire.**

H. C.—2300. C.—2292.

Class 381.—*Large Black Boars, farrowed in* 1919. [34 entries.]

2339 I. (£10, & R. N. for Champion.[1])—JOSEPH WATSON, Sudbourne Hall, Orford, Suffolk, for boar, born Jan. 1; *s.* Tartar Chief 8003, *d.* Bentley Io 22830 *by* Lord Thingay 6377.

2314 II. (£5.)—TERAH F. HOOLEY, Dry Drayton, Cambridge, for boar, born Jan. 20; *s.* Loughter Marvel 4437, *d.* Drayton Debutante 23294 *by* Bassingbourn Cliff 6337.

2310 III. (£3.)—JOHN H. GLOVER, Delamore Farm, Cornwood, S. Devon, for **Tinten-Chief**, born Jan. 1, bred by Harry E. Bastard, Tinten Manor, St. Tudy, Cornwall; *s.* Cornwood King John 8271, *d.* Tinten Black Bess 21st 17238 *by* Boss of the Valley 3855.

2321 IV. (£2.)—DR. A. R. KAY, The Manor House, Blakeney, Norfolk, for **Newland Hengist** 9207, born Jan. 12; *s.* Bassingbourn Newland Harold 7717, *d.* Bassingbourn Newland Dora 18862 *by* Royal Sovereign 4593.

2331 V. (£2.)—JOHN WARNE, Tregonhayne, Tregony, Grampound Road, Cornwall, for **Treveglos Sambo**, born Feb. 10; *s.* Valley Togo 4675, *d.* Treveglos Countess 5th 18396 *by* Drayton Dandy 3331.

2324 R. N.—HENRY J. KINGWELL, Bow Grange, Totnes, Devon, for **Brent Taximeter.**

H. C.—2340. C.—2333.

Class 382.—*Large Black Breeding Sows, farrowed in or before* 1917. [18 entries.]

2351 I. (£10, & R. N. for Champion.[3])—ALFRED PLAYLE, Bassingbourn, Cambs., for **Bassingbourn Queen** 24814, born Jan. 31, 1916; *s.* Royal Sovereign 4593, *d.* Bassingbourn Lassie 11134 *by* Sudbourne Sutler 3325.

2348 II. (£5.)—MISS KAY-MOUAT, Morton Farm, Castlemorton, Malvern, Worcs., for **McHeather Lassie 1st** 18688, born June 7, 1917; *s.* Ratby Morton Lad 6345, *d.* Cornwood Lass 49th 15410 *by* Border Prince 4843.

2352 III. (£3.)—A. BEVERLEY RINGER, Swardeston, Norfolk, for **Swardeston Betsy** 14364, born Sept. 23, 1912; *s.* Sudbourne Bixley 3565, *d.* Bixley Black Queen 1st 13122 *by* Bixley None Such 3095.

2353 IV. (£2.)—STANLEY A. STIMPSON, Bixley, Norwich, for **Bixley Mermaid** 19766, born Feb. 12, 1916; *s.* Swardeston Reynard 1st 5211, *d.* Oakenclough Princess 2nd 10384 *by* Brent Oakenclough 2961.

2347 V. (£2.)—G. A. GOODCHILD, Oak House, Great Yeldham, Essex, for **Tartar Princess 61st** 15632, born Feb. 4, 1915.

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[1] Champion Prize of £10 given by the Large Black Pig Society for the best Boar in Classes 379-381.

[2] Prizes given by the Large Black Pig Society.

[3] Silver Challenge Cup, value Twenty Guineas, given by the Large Black Pig Society for the best Sow in Classes 382 and 383.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

2344 R. N.—CUDMORE AND SONS, Raleigh Mills, Barnstaple, for **Raleigh Flower of Spring.**
H. C.—2345. C.—2356.

Class 383.—*Large Black Sows, farrowed in* 1918. [30 entries.]

2380 I. (£10, & Champion.[1])—ALFRED PLAYLE, Bassingbourn, Cambs., for **Bassingbourn Countess 1st** 20832, born Jan. 26; *s.* Cleave General 6367, *d.* Bassingbourne Maid 2nd 14472 *by* Bassingbourn Duke 3607.

2387 II. (£5.)—THOMAS WARNE, Trevisquite Manor, St. Mabyn S.O., Cornwall, for **Trevisquite Content 12th** 25302, born April 16; *s.* St. Merryn Boss of the Hill 6737, *d.* Trevisquite Content 10th 16540 *by* Boss of the Valley 3855.

2368 III. (£3.)—REGINALD S. HICKS, Wilbraham Temple, Cambs., for **Sudbourne Sabine** 21532, born Jan. 8; *s.* Sudbourne Laird 6505, *d.* Sudbourne Senora 1st 17614 *by* Drayton Mars 5289.

2365 IV. (£2.)—JOHN H. GLOVER, Delamore Farm, Cornwood, S. Devon, for **Cornwood Lass 53rd** 23134, born July 18; *s.* Loughter Marvel 4437, *d.* Cornwood Lass 50th 16362 *by* Drayton Disappointment 2nd 4573.

2361 V. £2.)—A. R. COWELL, Rectory Farm, Great Chishill, Royston, Cambs., for **Bassingbourn Gem** 24000, born March 12, bred by A. Playle, Bassingbourn, Cambs.; *s.* Cleave General 6367, *d.* Drayton Quality 17686 by Drayton Robinhood 5185.

2363 R. N.—S. F. EDGE, Gallops Homestead, Ditchling, Sussex, for **Vahan Dazzling Girl.**
H. C.—2385. C.—2388.

Class 384.—*Three Large Black Sows, farrowed in* 1919. [17 entries.]

2405 I. (£10.)—JOSEPH WATSON, Sudbourne Hall, Orford, Suffolk, for sows, born Jan. 3; *s.* Tartar Chief 8003, *d.* Bentley Juno 22832 *by* Lord Thingay 6377.

2401 II. (£5.)—JOHN WARNE, Tregonhayne, Tregony, Grampound Road, Cornwall, for sows, born Feb. 10; *s.* Valley Togo 4675, *d.* Treveglos Countess 5th 18396 *by* Drayton Dandy 3331.

2393 III. (£3.)—G. A. GOODCHILD, Oakhouse, Great Yeldham, Essex, for sows, born Jan. 13; *s.* Trevisquite Masterpiece 6425, *d.* Tartar Queen 9th 17526 *by* Kibbear John 1st 5391.

2396 IV. (£2.)—MISS KAY-MOUAT, Morton Farm, Castlemorton, Malvern, Worcs., for **McHeather Biddy 18th, 19th, 20th**, born Jan. 7th; *s.* Ratby Handyman 4th, 7591, *d.* McHeather Biddy 2nd 18152 *by* Brent Kitchener 4991.

2394 V. (£2.)—TERAH F. HOOLEY, Dry Drayton, Cambridge, for sows, born Jan. 20; *s.* Loughter Marvel 4437, *d.* Drayton Debutante 23294 *by* Bassingbourn Cliff 6337.

2397 R. N.—HENRY J. KINGWELL, Bow Grange, Totnes, Devon.
H. C.—2402. C.—2406.

Lincolnshire Curly-coated.

Class 385.—*Lincolnshire Curly-coated Boars, farrowed in or before* 1917. [1 entry.]

2407 I. (£10, & R. N. for Champion.[2])—GEORGE FREIR, Tolethorpe House, Deeping St. Nicholas, Spalding, for **Deeping East Kirkby**, born Aug. 10, 1917, bred by H. Scorer, East Kirkby, Spilsby; *s.* Highfield Swell 3863, *d.* East Kirkby Ladylike 10936 *by* Yaxley Doris 3471.

Class 386.—*Lincolnshire Curly-coated Boars, farrowed in* 1918.[3] [4 entries.]

2409 I. (£10, & Champion.[2])—HENRY CAUDWELL, Old Leake, Boston, for **Midville Double Faa 3rd** 3981, born Jan. 1; *s.* Heckington King 3755, *d.* Midville Ivy 12th 10902 *by* Deeping 104th 3371.

2411 II. (£5.)—COLONEL E. ROYDS, M.P., Holy Cross, Caythorpe, Grantham, for **Ponton Caythorpe**, born March 1, bred by W. Todd, Valley Farm, Little Ponton, Grantham; *s.* East Kirkby Hale, *d.* Ponton Pride 10830 *by* Caythorpe Surprise 3487.

2408 III. (£3.)—F. E. BOWSER, Wigtoft, Boston, for **Wigtoft Sunbeam** 4083, born April 8; *s.* Graby Hussar, *d.* Wigtoft Sensation 27th 10654 *by* Callow Park Triumph 2nd 2913.

2410 R. N.—GEORGE FREIR, Tolethorpe House, Deeping St. Nicholas, Spalding, for **Deeping Showman.**

Class 387.—*Lincolnshire Curly-coated Boars, farrowed in* 1919. [4 entries.]

2414 I. (£10.)—GEORGE FREIR, Tolethorpe House, Deeping St. Nicholas, Spalding, for **Deeping Royal**, born Jan. 2; *s.* Deeping East Kirkby, *d.* Deeping Royal 6th *by* Deeping Bold King.

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[1] Silver Challenge Cup, value Twenty Guineas, given by the Large Black Pig Society for the best Sow in Classes 382 and 383.

[2] Champion Prize of £5 5s. given by the Lincolnshire Curly-coated Pig Breeders' Association for the best Boar in Classes 385-387.

[3] Prizes given by the Lincolnshire Curly-coated Pig Breeders' Association.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

2412 II. (£5.)—HENRY CAUDWELL, Old Leake, Boston, for **Burton Last**, born Feb. 8, bred by the late Matthew Holmes, Heckington, Sleaford: *s.* Curley Marcham 2nd, *d.* Burton Harpist 5th 11242 *by* Lafford 8th 3578.

2413 III. (£3.)—GEORGE FREIR, for **Deeping Royal 2nd**, born Jan. 2; *s.* Deeping East Kirkby, *d.* Deeping Royal 6th *by* Deeping Bold King.

2415 R.N.—COLONEL E. ROYDS, M.P., Holy Cross, Caythorpe, Grantham, for **Caythorpe Hero.**

Class 388.—*Lincolnshire Curly-coated Breeding Sows, farrowed in or before* 1917. [3 entries.]

2418 I. (£10, & Champion.[1])—GEORGE FREIR, Tolethorpe House, Deeping St. Nicholas, Spalding, for **Deeping Pride 49th 9956**, born Jan. 5, 1914; *s.* Vainona Deeping 2141, *d.* Deeping Pride 40th 7870 *by* Postland King 1289.

2416 II. (£5.)—F. E. BOWSER Wigtoft, Boston, for **Wigtoft Sensation 30th 11050**, born Feb. 14, 1917; *s.* Callow Park Triumph 2nd 2913, *d.* Wigtoft Sensation 8th 9758 *by* Firsby Dreadnought 1057.

2417 III. (£3.)—HENRY CAUDWELL, Old Leake, Boston, for **Midville Ivy 12th** 10902 born March 27, 1915; *s.* Deeping 104th 3371, *d.* Midville Ivy 9th 10366 *by* Caythorpe Vainona 2973.

Class 389.—*Lincolnshire Curly-coated Sows, farrowed in* 1918. [1 entry.]

2419 I. (£10, & R. N. for Champion.[1])—HENRY CAUDWELL, Old Leake, Boston, for **Midville Ivy 20th** 11276, born Jan. 1; *s.* Heckington King 3755, *d.* Midville Ivy 12th 10902 *by* Deeping 104th 3371.

Class 390.—*Three Lincolnshire Curly-coated Sows, farrowed in* 1919. [3 entries.]

2421 I. (£10.)—GEORGE FREIR, Tolethorpe House, Deeping St. Nicholas, Spalding, for **Deeping Ashleaf 1st, 2nd, 3rd**, born Jan. 2; *s.* Deeping East Kirkby, *d.* Deeping Royal 6th *by* Deeping Bold King.

2420 II. (£5.)—HENRY CAUDWELL, Old Leake, Boston, for **Midville Ivy 23rd, 24th, 25th**, born Jan. 15; *s.* East Kirkby Leake 3883, *d.* Midville Ivy 12th 10902 *by* Deeping 104th 3371.

Gloucestershire Old Spots.[2]

Class 391.—*Gloucestershire Old Spots Boars, farrowed in or before* 1917. [8 entries.]

2426 I. (£10, Champion,[3] & R. N. for Champion.[4])—HENRY MATTHEWS, Down Farm, Winterbourne, Bristol, for **Woodlands Julian** 214, born in Jan., 1916, bred by W. E. King, Berkeley, Glos.: *s.* Woodlands Beacon 72, *d.* Woodlands Juno 12.

2430 II. (£5.)—WALTER G. WILLIAMS, Coleshill Home Farm, Highworth, Wilts., for **Watermoor Tom** (vol. 4, p. 454), born Nov. 23, 1917, bred by the Hon. Mrs. Thomas Kingscote, Watermoor House, Cirencester, Glos.; *s.* Woodlands Warrior 2nd 290, *d.* Berkeley Mary 2nd 349 *by* Berkeley Champion 30.

2423 III. (£3.)—J. ROWLAND BALL, High Offley Manor, Newport, Salop, for **Gilslake Duke** 156 (vol. 3, G.O.S. Herd Book), born April 17, 1916, bred by John H. Thomas, Cudleigh Court Farm, Spetchley, Worcester: *s.* Woodlands Jumbo 71, *d.* Gilslake Wonder 279 *by* Gilslake Best Boy 46.

2429 R. N.—JOHN H THOMAS, Cudleigh Court, Spetchley, Worcester, for **Oaklands Hero.**
H. C.—2425, 2428. C.—2424.

Class 392.—*Gloucestershire Old Spots Boars, farrowed in* 1918. [12 entries.]

2435 I. (£10, & R.N. for Champion.[3])—A. R. KIRBY, Fawley, Hereford, for **Gilslake Major** 622, born Jan. 22, bred by J. H. Thomas, Cudleigh Court, Spetchley, Worcester; *s.* Woodlands Jumbo 71, *d.* Gilslake Duchess 2nd 600 *by* Gilslake Best Boy 46.

2441 II. (£5.)—SIR W. G. WATSON, BT., Sulhampstead House, Reading, Berks., for **Gilslake President** 856, born Feb. 4, bred by J. H. Thomas, Cudleigh Court, Spetchley, Worcester; *s.* Woodlands Jumbo 71, *d.* Gilslake Wonder 279 *by* Gilslake Best Boy 46.

2431 III. (£3.)—HIATT C. BAKER, Oaklands, Almondsbury, Glos., for **Cleeve Hill Actor** 664, born Feb. 1, bred by Henry Bridgeman, Downend, Bristol.

2440 IV. (£2.)—ALBERT W. TROTMAN, Langston Court, Newport, Mon., for **Berkeley Nimrod** 522, born Feb. 20, bred by the Earl of Berkeley, Berkeley Castle, Gloucestershire; *s.* Woodlands Julian 214, *d.* Woodlands Nella 309 *by* Woodlands Warrior 78.

2437 R. N.—HENRY MATTHEWS, Down Farm, Winterbourne, Bristol, for **Winterbourne Champion.**
H. C.—2433, 2436, 2438. C.—2432.

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[1] Champion Prize of £5 5s. given by the Lincolnshire Curly-coated Pig Breeders' Association for the best Sow in Classes 388 and 389.

[2] £28 towards these Prizes were given by the Gloucestershire Old Spots Pig Society.

[3] Silver Challenge Cup, value £10 10s., given through the Gloucestershire Old Spots Pig Society for the best Boar in Classes 391-393.

[4] Silver Challenge Cup, value Forty Guineas, given through the Gloucestershire Old Spots Pig Society for the best Boar or Sow in Classes 391-395.

Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 393.—*Gloucestershire Old Spots Boars, farrowed in* 1919. [7 entries.]

2449 I. (£10.)—UNIVERSITY OF BRISTOL RESEARCH STATION, Long Ashton, Bristol, for **Ashton Lad** 1189, born March 18; *s.* Nailsea Lad 731, *d.* Hellens Embryo 2030 *by* Chalfield General 237.
2447 II. (£5.)—JOHN H. THOMAS, Cudleigh Court, Spetchley, Worcester, for **Gilslake Monarch** 1148, born Jan. 23; *s.* Oaklands Hero 414, *d.* Gilslake Duchess 2nd 600 *by* Woodlands Jumbo 71.
2446 III. (£3.)—OLYMPIA AGRICULTURAL CO., LTD., Ousegate, Selby, for boar, born Jan. 1; *s.* Eastern Baron 275, *d.* Yate Wallflower 794 *by* Failand King 13.
2444 R. N.—OLYMPIA AGRICULTURAL CO., LTD.
C.—2448.

Class 394.—*Gloucestershire Old Spots Breeding Sows, farrowed in or before* 1917. [15 entries.]

2460 I. (£10, & R.N. for Champion.[1])—JOHN H. THOMAS, Cudleigh Court, Spetchley, Worcester, for **Gilslake Duchess 2nd** 600, born March 23, 1916; *s.* Woodlands Jumbo 71, *d.* Gilslake Duchess 253 *by* Gilslake Best Boy 46.
2450 II. (£5.)—PERCY WEBSTER CORY, Manor Farm, Notgrove, Bourton-on-the-Water, Glcs., for **Rockwood Beauty** 383, born in 1914, bred by Alvan Lloyd Blanch, Frampton Cotterell, near Bristol.
2453 III. (£3.)—W. W. & J. DOUGLAS, 142 Hanhawe Road, Kingswood, Bristol, for **Yate Aster** 791, born April 7, 1916; *s.* Failand King 13, *d.* Yate Queen 455 *by* Winterbourne First Choice 5.
2464 IV. (£2.)—CAPTAIN ARNOLD S. WILLS, Thornby Hall, Northampton, for **Cottisbrooke Gloom** 1413, born March 30, 1917, bred by Captain R. B. Brassey, Cottisbrooke Hall, Northampton; *s.* Berkeley Jester 80, *d.* Sherbourne Dusky 512 *by* Cotswold Hero 113.
2458 R. N.—OLYMPIA AGRICULTURAL CO., LTD., Ousegate, Selby, for **Cleevehill Sister.**
H. C.—2452, 2456. C.—2455.

Class 395.—*Gloucestershire Old Spots Sows, farrowed in* 1918. [14 entries.]

2477 I. (£10, Champion,[1] & Champion.[2])—WILLS AND FLOYD, Marlwood, Thornbury, Glos., for **Oakleaze Ella** 1814, born Jan. 30, bred by A. J. Price, Oakleaze, Berkeley; *s.* Woodlands Julian 214, *d.* Oakleaze Cora 540 *by* Berkeley Jupiter 54.
2468 II. (£5.)—H. L. LYON, Hillam Hall, Monk Fryston, Yorks, for **Hillam Foundation** 2742, born Jan. 15, bred by Stewart Heaton, Knavesmire Lodge, York; *s.* Failand Hero 238, *d.* Cleavehill Polly 775 *by* Toddington Ben 33.
2475 III. (£3.)—CAPT. ARNOLD S. WILLS, Thornby Hall, Northampton, for **Thornby Gem** 2663, born May 26; *s.* Winterbourne Blanco 483, *d.* Cottisbrooke Gloom 1413 *by* Berkeley Jester 80.
2466 R. N.—HIATT C. BAKER, Oaklands, Almondsbury, Glos., for **Oaklands Jane 2nd.**
H. C.—2465, 2476. C.—2467, 2469, 2472, 2473, 2478.

Class 396.—*Three Gloucestershire Old Spots Sows, farrowed in* 1919. [6 entries.]

2484 I. (£10.)—JOHN H. THOMAS, Cudleigh Court, Spetchley, Worcester, for **Gilslake Duchess 4th** 3395, **Gilslake Belle** 3396, and **Gilslake Cherub** 3393, born Jan. 23; *s.* Oaklands Hero 414, *d.* Gilslake Duchess 2nd 600 *by* Woodlands Jumbo 71.
2481 II. (£5.)—JAMES NAGLE, Pamber Place, Charter Ley, Basingstoke, for sows, born March 8; *s.* Heathermead Jumbo 609, *d.* Pockington Amy 898 *by* Woodlands Julian 214.

POULTRY.

By "Cock," "Hen," "Gander," and "Goose," are meant birds hatched previous to January 1, 1919; and by "Cockerel" and "Pullet" are meant birds hatched in 1919.

Class 397.—*Silver Grey Dorking Cocks.* [7 entries.]

1 I. (30*s.*), & 7 III. (10*s.*)—ARTHUR C. MAJOR, Ditton, Langley, Bucks.
5 II. (20*s.*)—JOHN MECHIE, Auchtermuchty, Fifeshire.
4 R. N.—RALPH ALTY, Buckshaw Hall, Euxton, Chorley, Lancs.
H.C.—3. C.—6.

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[1] Silver Challenge Cup, value £10 10s., given through the Gloucestershire Old Spots Pig Society for the best Sow in Classes 394 and 395.

[2] Silver Challenge Cup, value Forty Guineas, given through the Gloucestershire Old Spots Pig Society for the best Boar or Sow in Classes 391-395.

Class 398.—*Silver Grey Dorking Hens.* [6 entries.]

8 I. (30s., & Champion.[1])—MARCHIONESS OF TWEEDDALE, Yester, Gefford, Edinburgh.
11 II. (20s.)—JOHN MECHIE, Auchtermuchty, Fifeshire.
10 III. (10s.)—ARTHUR C. MAJOR Ditton, Langley, Bucks.
12 R. N.—CAPT. G. PHIPPS HORNBY, Somerton, Somerset.
H. C.—13. C.—9.

Class 399.—*Dark Coloured Dorking Cocks.* [9 entries.]

19 I. (30s., & Champion.[2])—JOHN MECHIE, Auchtermuchty, Fifeshire.
17 II. (20s.)—ARTHUR C. MAJOR, Ditton, Langley, Bucks.
14 III. (10s.)—MARCHIONESS OF TWEEDDALE, Yester, Gefford, Edinburgh.
21 R. N.—CAPT. G. PHIPPS HORNBY, Somerton, Somerset.
H. C.—15. C.—16, 22.

Class 400.—*Dark Coloured Dorking Hens.* [12 entries.]

32 I. (30s.)—C. SNEDDON, Ribby Road, Kirkham, Lancs.
23 II. (20s.)—MARCHIONESS OF TWEEDDALE, Yester, Gefford, Edinburgh.
27 III. (10s.)—NORTHCOTT & SON, Holmbush, Par, Cornwall.
33 R. N.—JOHN MECHIE, Auchtermuchty, Fifeshire.
H. C.—25, 28, 31. C.—24, 29, 30.

Class 401.—*Dorking Cockerels, any colour.* [2 entries.]

35 I. (30s.), & 36 II. (20s.)—ARTHUR C. MAJOR, Ditton, Langley, Bucks.

Class 402.—*Dorking Pullets, any colour.* [2 entries.]

37 I. (30s., & Champion[3]), & 38 II. (20s.)—ARTHUR C. MAJOR, Ditton, Langley, Bucks.

Class 403.—*Langshan Cocks or Cockerels.* [12 entries.]

40 I. (30s.)—J. W. WALKER, Normanstead, Henley-on-Thames.
44 II. (20s.)—B. WILKINSON, Towngate, Hipperholme, near Halifax, Yorks.
39 III. (10s.)—T. GRIFFITHS, Castle Inn, Llangennech, near Llanelly.
48 R. N.—C. F. PHILLIPS, 1:2 Macoma Road, Plumstead, S.E.18.
H. C.—42, 50. C.—43, 49.

Class 404.—*Langshan Hens or Pullets.* [8 entries.]

51 I. (30s.)—J. W. WALKER, Normanstead, Henley-on-Thames.
53 II. (20s.), & 57 R. N.—JOSEPH HOWE, Grosvenor Hotel, Church Street, Blackpool.
54 III. (10s.)—A. SIMPSON, Burnley Road, Padiham, Lancs.
H. C.—55, 56. C.—58.

Class 405.—*Croad Langshan Cocks or Cockerels.* [15 entries.]

61 I. (30s.), & 67 II. (20s.)—E. J. TAUNTON, Tower House, Bemerton, Salisbury.
63 III. (10s.)—E. NEWALL, Gravel, Winsford, Cheshire.
62 R. N.—JOHN GRIFFITHS, Penywaen Farm, Ystradgynlais, Swansea Valley, S. Wales.
H. C.—60, 6[illegible], 66. C.—64, 69, 72.

Class 406.—*Croad Langshan Hens or Pullets.* [15 entries.]

75 I. (30s.)—E. NEWALL, Gravel, Winsford, Cheshire.
86 II. (20s.)—W. RAY, 60 West Street, Aspatria, Cumberland.
83 III. (10s.)—T. RICHARDS, 17 Church Street, Loanhead, Midlothian.
80 R. N.—H. P. MULLENS, The Red House, Ovington, Winchester.
H. C.—76, 77. C.—79, 81, 87.

Class 407.—*Brahma Cocks or Cockerels.* [5 entries.]

92 I. (30s.)—M. EWBANK, Cawton, Hovingham, Malton, Yorks.
9[illegible] II. (20s.), & 93 III. (10s.)—H. L. POPHAM, Hunstrete House, Pensford, Bristol.
91 R. N.—A. BROWN, "Ianthe," Leagrave, Bedfordshire.

Class 408.—*Brahma Hens or Pullets.* [5 entries.]

96 I. (30s.)—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.
95 II. (20s.)—A. BAILEY, Waugh Brow, Mobberley, Knutsford.
98 III. (10s.), & 94 R. N.—H. L. POPHAM, Hunstrete House, Pensford, Bristol.
H. C.—97.

Class 409.—*Cochin Cocks or Cockerels.* [7 entries.]

99 I. (30s.), 105 II. (20s.), & 103 R. N.—G. H. PROCTER, Flass House, Durham.
104 III. (10s.)—C. M. STICKINGS, Ronton Vicarage, Haughton, Stafford.
H. C.—102. C.—100.

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[1] Special Prize, value £1 1s., given by the Dorking Club for the best Silver Grey Dorking.

[2] Special Prize, value £1 1s., given by the Dorking Club for the best Dark Coloured Dorking.

[3] Special Prize, value £1 1s., given by the Dorking Club for the best Dorking Chicken hatched in 1919.

Class 410.—*Cochin Hens or Pullets.* [4 entries.]

106 I. (30*s.*), 108 II. (20*s.*), & 109 III. (10*s.*)—G. H. PROCTER, Flass House, Durham.
107 R. N.—C. M. STICKINGS, Ronton Vicarage, Haughton, Stafford.

Class 411.—*Red Sussex Cocks.* [8 entries.]

110 I. (30*s.*, & Champion.[1])—J. W. WALKER, Normanstead, Henley-on-Thames.
116 II. (20*s.*)—G. W. H. ELLIS, The Manor House, Lingfield, Surrey.
115 III. (10*s.*)—J. S HEPBURN, South Farm, Arbury, Nuneaton, Warwickshire.
114 R. N.—MRS. ADE, Grove Hill, Hellingly, Sussex.
H. C.—111, 117. C.—112.

Class 412.—*Red Sussex Hens.* [9 entries.]

123 I. (30*s.*)—J. RUSSEL, Mapleton, Edenbridge, Kent.
118 II. (20*s.*)—J. W. WALKER, Normanstead, Henley-on-Thames.
125 III. (10*s.*)—C. & E. STEPHENSON, Burton House, near Stafford.
119 R. N.—H. JACKSON, 15 Mark Street, Riverside, Cardiff.
H. C.—122, 124. C.—120, 121.

Class 413.—*Red Sussex Cockerels.* [3 entries.]

129 I. (30*s.*), & 128 II. (20*s.*)—C. & E. STEPHENSON, Burton House, near Stafford.
127 III. (10*s.*)—J. W. WALKER, Normanstead, Henley-on-Thames.

Class 414.—*Red Sussex Pullets.* [4 entries.]

132 I. (30*s.*), & 133 II. (20*s.*)—C. & E. STEPHENSON, Burton House, near Stafford.
130 III. (10*s.*)—J. W. WALKER, Normanstead, Henley-on-Thames.
131 R. N.—J. RUSSEL. Mapleton, Edenbridge, Kent.

Class 415.—*Light Sussex Cocks.* [20 entries.]

145 I. (30*s.*, & Champion[2]), & 141 II. (20*s.*)—C. & E. STEPHENSON, Burton House, near Stafford.
153 III. (10*s.*)—J. S. HEPBURN, South Farm, Arbury, Nuneaton, Warwickshire.
150 R. N.—W. REID & SON, Hallcraig House, Airdrie.
H. C.—134, 135, 137. C.—144, 148, 149.

Class 416.—*Light Sussex Hens.* [16 entries.]

159 I. (30*s.*), & 164 R. N.—REV. G. A. CRAWSHAY, Melchbourne Vicarage, Beds.
156 II. (20*s.*)—C. & E. STEPHENSON, Burton House, near Stafford.
168 III. (10*s.*)—FRED SMALLEY, Cove Hall, North Cove, Beccles, Suffolk.
H. C.—157, 158. C.—161, 162.

Class 417.—*Light Sussex Cockerels.* [12 entries.]

170 I. (30*s.*)—ROBERT L. MOND, J.P., Combe Bank, Sevenoaks, Kent.
178 II. (20*s.*), & 175 III. (10*s.*)—FRANK H. WHEELER, Dacre Cottage, Billingshurst.
173 R. N.—G. W. H. ELLIS, The Manor House, Lingfield, Surrey.
H. C.—171, 180. C.—172, 176, 179.

Class 418.—*Light Sussex Pullets.* [16 entries.]

185 I. (30*s.*), & 194 II. (20*s.*)—C. & E. STEPHENSON, Burton House, near Stafford.
190 III. (10*s.*)—FRED SMALLEY, Cove Hall, North Cove, Beccles, Suffolk.
193 R. N.—ROBERT L. MOND, J.P., Combe Bank, Sevenoaks, Kent.
H. C.—182, 191. C.—184, 186, 189.

Class 419.—*Speckled Sussex Cocks.* [13 entries.]

205 I. (30*s.*, & Champion.[3])—C. & E. STEPHENSON, Burton House, near Stafford.
207 II. (20*s.*)—JOHN LEWIS, Manordeilo, Cross Hands, Llannon, S.O., Carmarthenshire
199 III. (10*s.*), & 208 R. N.—J. RUSSEL, Mapleton, Edenbridge, Kent.
H. C.—206, 209. C.—201, 202.

Class 420.—*Speckled Sussex Hens.* [17 entries.]

213 I. (30*s.*), & 221 R. N.—J. RUSSEL, Mapleton, Edenbridge, Kent.
225 II. (20*s.*)—J. LEWIS, Manordeilo, Cross Hands, Llannon, S.O., Carmarthenshire.
219 III. (10*s.*)—F. E. POPE, Great Toller, Dorchester.
H. C.—214, 215. C.—220, 223.

Class 421.—*Speckled Sussex Cockerels.* [4 entries.]

231 I. (30*s.*)—C. & E. STEPHENSON, Burton House, near Stafford.
228 II. (20*s.*)—J. RUSSEL, Mapleton, Edenbridge, Kent.
229 III. (10*s.*)—ROBERT L. MOND, J.P., Combe Bank, Sevenoaks, Kent.

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[1] Special Prize given by the Sussex Poultry Club for the best Red Sussex.
[2] Special Prize given by the Sussex Poultry Club for the best Light Sussex.
[3] Special Prize given by the Sussex Poultry Club for the best Speckled Sussex.

Class 422.—*Speckled Sussex Pullets.* [3 entries.]

232 I. (30s.), & 234 II. (20s.)—C. & E. STEPHENSON, Burton House, near Stafford.

Class 423.—*Brown Sussex Cocks or Cockerels.* [6 entries.]

235 I. (30s., & Champion[1]), & 238 R. N.—MRS. ADE, Grove Hill, Hellingly, Sussex.
236 II. (20s.) - J. RUSSEL, Mapleton, Edenbridge, Kent.
237 III. (10s.)—L. W. ADAMS, Red Barns Farm, Fareham, Hants.
H. C.—239, 240.

Class 424.—*Brown Sussex Hens or Pullets.* [7 entries.]

244 I. (30s.)—J. FAIRALL, Sandhills Farm, Bodle Street, Hailsham.
246 II. (20s.)—A. AMEY, Otham Court, Polegate, Sussex.
247 III. (10s.)—J. S HEPBURN, South Farm, Arbury, Nuneaton, Warwickshire.
242 R. N.—J. RUSSEL, Mapleton, Edenbridge, Kent.
H. C.—241, 243. C.—245.

Class 425.—*Faverolle Cocks or Cockerels.* [3 entries.]

250 I. (30s.)—WILLIAM FOOTE, Springfield Poultry Farm, Armthorpe, Doncaster, Yorks.
248 II. (20s.)—G. TOMKIN, Marden, Kent.
249 III. (10s.)—C. H. BRADLEY, Tibberton, Gloucester.

Class 426.—*Faverolle Hens or Pullets.* [4 entries.]

251 I. (30s.)—ROBERT L. MOND, J.P., Combe Bank, Sevenoaks, Kent.
253 II. (20s.)—MISS THYNNE, Red Court Poultry Farm, Haslemere, Surrey.
252 III. (10s.)—C. H. BRADLEY, Tibberton, Gloucester.

Class 427.—*Maline Cocks or Cockerels.* [5 entries.]

258 I. (30s.)—MRS. TERROT, Wispington House, Cookham, Berks.
256 II. (20s.)—C. R. LONGE, "Rangemore," Rostherne, Knutsford, Cheshire.
257 III. (10s.), & 255 R. N.—MAJOR F. HERBERT, Ty-Gwyn, Raglan, Mon.
H. C.—259.

Class 428.—*Maline Hens or Pullets.* [5 entries.]

262 I. (30s.)—WILLIAM FOOTE, Springfield Poultry Farm, Armthorpe, Doncaster, Yorks.
263 II. (20s.)—C. R. LONGE, "Rangemore," Rostherne, Knutsford, Cheshire.
264 III. (10s.), & 260 R. N.—MAJOR F. HERBERT, Ty-Gwyn, Raglan, Mon.

Class 429.—*Silver Campine Cocks or Cockerels.* [15 entries.]

278 I. (30s., & Champion.[2])—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.
266 II. (20s.)—S. HINCHLIFFE, Willoughbridge Lodge, Market Drayton.
268 III. (10s.)—R. EDWARDS, Stanton Old Court, Pembridge.
270 R. N.—O. SHEPPARD, 44 Carnarvon Road, Reading.
H. C.—265. C.—274.

Class 430.—*Silver Campine Hens or Pullets.* [11 entries.]

289 I. (30s.)—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.
283 II. (20s.), & 288 III. (10s.)—REV. E. LEWIS JONES, Burton Rectory, Neyland, Pemb.
280 R. N.—S. HINCHLIFFE, Willoughbridge Lodge, Market Drayton.
H. C.—282, 290. C.—281.

Class 431.—*Gold Campine Cocks or Cockerels.* [4 entries.]

291 I. (30s.). & 294 II. (20s.)—REV. E LEWIS JONES, Burton Rectory, Neyland, Pemb,
292 III. (10s.)—REV. W. SERJEANTSON, Acton Burnell Rectory, Shrewsbury.

Class 432.—*Gold Campine Hens or Pullets.* [5 entries.]

298 I. (30s., & Champion.[3])—R. ANTHONY. Home Farm, Euxton, Chorley, Lancs.
299 II. (20s.) & 295 III. (10s.)—REV. E. LEWIS JONES, Burton Rectory, Neyland, Pemb.

Class 433.—*White Wyandotte Cocks.* [16 entries.]

301 I. (30s.)—JOHN WHARTON, Honeycott Farm, Hawes, Yorks.
302 II. (20s.)—J. E. KERR, Harviestoun Castle, Dollar.
309 III. (10s.)—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.
304 R. N.—W. MACGIBBON, "Burside," Rolleston, Burton-on-Trent.
H. C.—305, 308, 312, 315, C. - 300, 303 310.

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[1] Special Prize given by the Sussex Poultry Club for the best Brown Sussex.

[2] Silver Medal given by the Campine Club for the best Silver Campine in Classes 429 and 430.

[3] Gold Medal given by the Campine Club for the best Gold Campine in Classes 431 and 432.

Class 434.—*White Wyandotte Hens.* [21 entries.]

317 I. (30*s.*)—W. MACGIBBON "Burside," Rolleston, Burton-on-Trent.
336 II. (20*s.*)—WILLIAM CORY, Roskear Farm, Camborne, Cornwall.
331 III. (10*s.*)—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.
325 R. N.—J. E. KERR, Harviestoun Castle, Dollar.
H. C.—318, 333. C.—316, 334.

Class 435.—*White Wyandotte Cockerels.* [10 entries.]

338 I. (30*s.*, & Champion[1]), & 343 II. (20*s.*)—JOHN WHARTON, Honeycott Farm, Hawes.
340 III. (10*s.*)—W. MACGIBBON, "Burside," Rolleston, Burton on-Trent.
337 R. N.—R. TUSHINGHAM, 6 Alma Road, Aigburth, Liverpool,
H. C.—345.

Class 436.—*White Wyandotte Pullets.* [7 entries.]

347 I. (30*s.*, & Champion[2]), & 352 III. (10*s.*)—JOHN WHARTON, Honeycott Farm, Hawes.
350 II. (20*s.*)—W. MACGIBBON, "Burside," Rolleston, Burton-on-Trent.
H. C.—349.

Class 437.—*Black Wyandotte Cocks.* [5 entries.]

358 I. (30*s.*)—T. SIDDONS, Osgathorpe, Loughborough.
355 II. (20*s.*)—T J. ALTY, Vine Cottage, Pilling, Garstang, Lancs.
356 III. (10*s.*)—S. JONES, 1 Knoyle Street, Caersalem, Landove.
357 R. N.—J. G. MARTIN, Newfield Farm, Chapel-en-le-Frith, Derbyshire.
H. C.—354.

Class 438.—*Black Wyandotte Hens.* [12 entries.]

362 I. (30*s.*, & Champion[3]), & 366 II. (20*s.*)—R. HARGREAVES, Banks Farm, Whalley, Lancs.
368 III. (10*s.*)—T. J. ALTY, Vine Cottage, Pilling, Garstang, Lancs.
360 R. N.—W. W. THOMAS, 30 Sydney Street, Brynhyfryd, Swansea.
H. C.—363, 369. C.—365, 370.

Class 439.—*Black Wyandotte Cockerels.* [No entry.]

Class 440.—*Black Wyandotte Pullets.* [No entry.]

Class 441.—*Gold or Silver Laced Wyandotte Cocks or Cockerels.* [11 entries.]

373 I. (30*s.*)—R. MCCRONE, Paundland, Dunscore.
380 II. (20*s.*)—J. G. MORTEN, Pentrick, Derby.
371 III. (10*s.*)—JOHN PROCTOR, Goosnargh, Preston.
381 R. N.—J. RUNDLE, Churchtown Farm, Lanlivery, Lostwithiel, Cornwall.
H. C.—374, 379. C.—375.

Class 442.—*Gold or Silver Laced Wyandotte Hens or Pullets.* [9 entries.]

388 I. (30*s.*)—T. LOCKWOOD, The Woodlands, Pateley Bridge, Harrogate.
387 II. (20*s.*)—J. RUNDLE, Churchtown Farm, Lanlivery, Lostwithiel, Cornwall.
389 III. (10*s.*)—C. W. WASHINGTON, Dringhoe Poultry Farm, Beeford, Driffield.
382 R. N.—JOHN PROCTOR, Goosnargh, Preston.
H. C.—386.

Class 443.—*Blue Wyandotte Cocks or Cockerels.* [4 entries.]

391 I. (30*s.*, & Champion.[4])—MRS. W. HOLDSWORTH, Bernard House, Newbridge Crescent, Wolverhampton.
394 II. (20*s.*)—EDMUND BARNES, Mossland Farm, Astley Road, Irlam, Manchester.
392 III. (10*s.*)—T. C. CLARK, Glen Tower, Avenue Road, Wolverhampton.
393 R. N.—A. KERR, "The Highlands," Sutton Park Road, Kidderminster.

Class 444.—*Blue Wyandotte Hens or Pullets.* [5 entries.]

399 I. (30*s.*, & Champion.[5])—EDMUND BARNES, Mossland Farm, Astley Road, Irlam, Manchester.
397 II. (20*s.*)—J. GRAINGER, Green Top, Micklehurst, Mossley, near Manchester.
395 III. (10*s.*)—MRS. W. HOLDSWORTH, Bernard House, Newbridge Crescent, Wolverhampton.
398 R. N.—J. WALLBANK, Longridge, near Preston.
H. C.—396.

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[1] Special Prize of 5*s.* given by the White Wyandotte Club, for the best Cockerel in Class 435.

[2] Special Prize of 5*s.* given by the White Wyandotte Club, for the best Pullet in Class 436.

[3] Special Prize of 10*s.* 6*d.* given by the Black Wyandotte Club, for the best Black Wyandotte in Classes 437-440.

[4] Special Prize given by the Blue Wyandotte Club, for the best Cock in Class 443.

[5] Special Prize given by the Blue Wyandotte Club, for the best Hen in Class 444.

Class 445.—*Wyandotte Cocks or Cockerels, any other variety.* [19 entries.]

416 I. (30*s.*)—W. LEAR, Howard Cottage, Wetherel, Carlisle.
405 II. (20*s.*)—A. THOMSON, Spring Bank, Imperial Crescent, Town Moor Avenue Doncaster.
415 III. (10*s.*)—L. H. WACE, Kingsland Poultry Farm, Beaminster, Dorset.
408 R. N.—C. J TWIST, South Newington Hill, Great-Tew, Enstone, Oxon.
H. C.—406, 410. 411. C.—400, 409.

Class 446.—*Wyandotte Hens or Pullets, any other variety.* [14 entries.]

430 I. (30*s.*)—J. T. MORRIS, 15 Cilhaul Terrace, Mountain Ash.
426 II. (20*s.*)—G. TOMKIN, Marden, Kent.
423 III. (10*s.*), & 431 R. N.—L. H. WACE, Kingsland Poultry Farm, Beaminster.
H. C.—420. C.—419, 421, 424.

Class 447.—*Buff Orpington Cocks.* [21 entries.]

433 I. (30*s.*, & Champion[1]), & 439 III. (10*s.*)—W. J. GOLDING, Westwood Farm, Weald.
450 II. (20*s.*)—JOHN WARREN, Cross Tree, Marnhull, Dorset.
441 R. N.—ROBERT L. MOND, J.P., Combe Bank, Sevenoaks, Kent.
H. C.—440, 445, 448 C.—449.

Class 448.—*Buff Orpington Hens.* [11 entries.]

462 I. (30*s.*)—F. M. ROGERS, 3 Melrose Villas, Western Road, Hurstpierpoint, Sussex.
463 II. (20*s.*), & 454 III. (10*s.*)—ROBERT L. MOND, J.P., Combe Bank, Sevenoaks, Kent.
461 R. N.—W. T. JEFFERIES, 105 Clouds Hill Road, St. George, Bristol.
H. C.—455.

Class 449.—*Buff Orpington Cockerels.* [8 entries.]

466 I. (30*s.*)—ROBERT L. MOND, J.P., Combe Bank, Sevenoaks, Kent.
467 II. (20*s.*), & 470 R. N.—F. M. ROGERS, 3 Melrose Villas, Western Road, Hurstpierpoint, Sussex.
472 III. (10*s.*)—W. J. GOLDING, Westwood Farm, Weald, Kent.

Class 450.—*Buff Orpington Pullets.* [16 entries.]

474 I. (30*s.*), & 481 R. N.—W. J. GOLDING, Westwood Farm, Weald, Kent.
473 II. (20*s.*)—ROBERT L. MOND, J.P., Combe Bank, Sevenoaks, Kent.
478 III. (10*s.*)—W. M. BELL, St. Leonard's Poultry Farm, Ringwood, Hants.
H. C.—479, 483. C.—475, 486.

Class 451.—*White Orpington Cocks.* [11 entries.]

492 I. (30*s.*, & Champion.[2])—W. MACGIBBON, "Burside," Rolleston, Burton-on-Trent.
495 II. (20*s.*)—S. J. HOSKIN, 7 Sampson Terrace, Cannor Downs, Hayle, Cornwall.
489 III. (10*s.*)—MARCHIONESS OF TWEEDDALE, Yester, Gefford, Edinburgh.
490 R. N.—W. M. BELL, St. Leonard's Poultry Farm, Ringwood, Hants.
H. C.—496.

Class 452.—*White Orpington Hens.* [16 entries.]

499 I. (30*s.*, & Champion[3]), & 508 III. (10*s.*)—W. MACGIBBON, "Burside," Rolleston, Burton-on-Frent.
506 II. (20*s.*)—ROBERT L. MOND, J.P., Combe Bank, Sevenoaks, Kent.
508A R. N.—MAJOR H. WATTS, Alderley Edge, Cheshire.
H. C.—505A, 509. C.—505, 511A.

Class 453.—*White Orpington Cockerels.* [4 entries.]

512 I. (30*s.*), & 515 III. (10*s.*)—W. M. BELL, St. Leonard's Poultry Farm, Ringwood.
514 R. N.—F. MARTIN, Rectory Cottage, Upwell, Norfolk.

Class 454.—*White Orpington Pullets.* [7 entries.]

517 I. (30*s.*)—I. ENTWISTLE, "Sandside," Chatsworth, Ainsdale, Northport.
520 II. (20*s.*)—W. M. BELL, St. Leonard's Poultry Farm, Ringwood, Hants.
519 III. (10*s.*)—A. H. BARTLETT, High Street, Crowthorpe.
522 R. N.—JENKINS & THOMAS, Brynteg Bynea, near Llanelly.

Class 455.—*Black Orpington Cocks.* [19 entries.]

530 I. (30*s.*, & Champion.[4])—N. M. AGNEW, Oversley, Morley, Wilmslow.
526 II. (20*s.*)—JENKINS & THOMAS, Brynteg Bynea, near Llanelly.
524 III. (10*s.*)—ROBERT L. MOND, J.P., Combe Bank, Sevenoaks, Kent.
533 R. N.—G. W. WORRELL, 8 Walcot Buildings, Bath.
H. C.—532, 536. C.—541.

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[1] Piece of Plate, value £3 3*s.*, given by the Buff Orpington Club for the best Buff Orpington in Classes 447-450.

[2] Special Prize given by the White Orpington Club for the best Cock or Cockerel in Classes 451 and 453.

[3] Special Prize given by the White Orpington Club for the best Hen or Pullet in Classes 452 and 454.

[4] Bronze Medal given by the Black Orpington Club for the best Cock or Cockerel in Classes 455 and 457.

Class 456.—*Black Orpington Hens.* [17 entries.]

550 I. (30*s*., & Champion.[1])—A. H. BROWNSON, Manor Court Road, Nuneaton.
552 II. (20*s*.)—JOHNS BROS., Trentinnen Farm, St. Endellion, North Cornwall.
546 III. (10*s*.)—D. JOPSON, Goff Nook, Nelson, Lancashire.
545 R. N.—W. L. JONES, Plas Acton Lodge, Wrexham, N. Wales.
H. C.—542, 548, 553. C.—543.

Class 457.—*Black Orpington Cockerels.* [3 entries.]

561 I. (30*s*.)—W. M. BELL, St. Leonard's Poultry Farm, Ringwood, Hants.
559 III. (10*s*.)—D. JOPSON, Goff Nook, Nelson, Lancashire.
560 R. N.—S. R. HOOPER, Cuddra House, Par Station, Cornwall.

Class 458.—*Black Orpington Pullets.* [3 entries.]

564 I. (30*s*.)—D. JOPSON, Goff Nook, Nelson, Lancashire.
562 II. (20*s*.)—W. M. BELL, St. Leonard's Poultry Farm, Ringwood, Hants.
563 R. N.—S. R. HOOPER, Cuddra House, Par Station, Cornwall.

Class 459.—*Blue Orpington Cocks or Cockerels.* [6 entries.]

565 I. (30*s*.), & 568 II. (20*s*.)—ROBERT L. MOND, J.P., Combe Bank, Sevenoaks, Kent.
567 III. (10*s*.)—MISS THYNNE, Red Court Poultry Farm, Haslemere, Surrey.
566 R.N.—MISS L. RICHARDS, 8 Clyne Terrace, Clyne, Neath.
H. C.—570.

Class 460.—*Blue Orpington Hens or Pullets.* [8 entries.]

575 I. (30*s*.), & 571 II. (20*s*.)—ROBERT L. MOND, J.P., Combe Bank, Sevenoaks, Kent.
573 III. (10*s*.)—MISS THYNNE, Red Court Poultry Farm, Haslemere, Surrey.
577 R. N.—W. REID & SON, Hallcraig House, Airdrie.
H. C.—578. C.—576.

Class 461.—*British Rhode Island Red Single Comb Cocks.* [37 entries.]

602 I. (30*s*.)—H. J. LEWIS, Field House, Shardlow, Derby.
579 II. (20*s*.), & 589 R. N.—W. R. ABBEY, Croft Farm, Hessay, York.
592 III. (10*s*.)—J. MANN, 18 Park Street, Worksop, Notts.
H. C.—594, 608. C.—583, 588, 606.

Class 462.—*British Rhode Island Red Single Comb Hens.* [25 entries.]

636 I. (30*s*., & Champion.[2])—N. A. AXE, Hand Dale Farm, Hartington, Buxton.
635 II. (20*s*.), & 638 III. (10*s*.)—A. J. WOOD, Rose Cottage, Winchmore Hill, London, N. 21.
629 R. N.—A. T. BROCKLEHURST, 30 Meadowcroft Road, Palmers Green, London, N. 13.
H. C.—633, 634. C.—618, 640.

Class 463.—*British Rhode Island Red Rose Comb Cocks.* [13 entries.]

644 I. (30*s*., & Champion.[3])—N. A. AXE, Hand Dale Farm, Hartington, Buxton.
643 II. (20*s*.)—REV. A. WHITELEY, Broadmoor, Crowthorne, Berks.
648 III. (10*s*.)—MISS M. H. CLAY, Wembury House, Plymstock, S. Devon.
642 R. N.—MISS F. CHAMPION, Heather Hall, Leicester.
H. C.—647, 649. C.—641, 645.

Class 464.—*British Rhode Island Red Rose Comb Hens.* [7 entries.]

659 I. (30*s*.)—R. E. MARSH, Swanwick, Alfreton, Derbyshire.
656 II. (20*s*.)—G. NEWMAN, Treorchy Hotel, Treorchy, Glam.
660 III. (10*s*.)—J. PINCH & SON, Glebe Poultry Farm, St. Kew, Wadebridge, Cornwall.
654 R. N.—GEORGE SCOTT, The Windmill, Pudsey, Yorks.

Class 465.—*British Rhode Island Red Single Comb or Rose Comb Cockerels.* [19 entries.]

674 I. (30*s*.), & 679 II. (20*s*.)—MISS M. H. CLAY, Wembury House, Plymstock, S. Devon.
677 III. (10*s*.)—C. H. HORN, Buckland Home, Wellington, Somerset.
669 R. N.—W. REID & SON, Hallcraig House, Airdrie.
H. C.—665, 672. C.—667, 668.

Class 466.—*British Rhode Island Red Single Comb or Rose Comb Pullets.* [31 entries.]

694 I. (30*s*., & Champion[4]). & 684 R. N.—H. J. LEWIS, Field House, Shardlow, Derby.
689 II. (20*s*.), & 681 III. (10*s*.)—W. R. ABBEY, Croft Farm, Hessay, York.
H. C.—702, 704. C.—692, 696.

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[1] Bronze Medal given by the Black Orpington Club for the best Hen or Pullet in Classes 456 and 458.

[2] Silver Spoon given by the British Rhode Island Red Club for the best Single Comb in Classes 461 and 462.

[3] Silver Spoon given by the British Rhode Island Red Club for the best Rose Comb in Classes 463 and 464.

[4] Silver Spoon given by the British Rhode Island Red Club for the best Cockerel or Pullet in Classes 465 and 466.

Class 467.—*Russian Orloff Mahogany Cocks or Cockerels.* [6 entries.]

712 I. (30*s*., & Champion[1]), & 716 R. N.—H. THORNTON, Rye Croft, Honley, near Huddersfield.
715 II. (20*s*.)—W. SUMNER. 141 Grove Lane, Handsworth, Birmingham.
711 III. (10*s*.)—MRS. F. DAVIES. Castle Hill, Holywell, N. Wales.

Class 468.—*Russian Orloff Mahogany Hens or Pullets.* [5 entries.]

721 I. (30*s*.)—MRS. A. SHERSTON, Otley Hall, Ipswich.
719 II. (20*s*.)—G. SCOTT, The Windmill, Pudsey, Yorks.

Class 469.—*Old English Game Black-Red Cocks or Cockerels.* [14 entries.]

728 I. (30*s*.)—A. H. BROWNSON, Manor Court Road, Nuneaton,
727A II. (20*s*.)—JOHN OLIVER, Threepwood Farm, Haydon Bridge.
723 III. (10*s*.)—WALTER FIRTH, Read, Blackburn.
H. C.—722, 729, 731, 733.

Class 470.—*Old English Game Clay or Wheaten Hens or Pullets.* [14 entries.]

735 I. (30*s*.)—HUGHES & EXTENCE, 128 High Street, Mountain Ash, S. Wales.
736 II. (20*s*.)—J. WATSON, Eden Mount, Kendal, Westmorland.
737 III. (10*s*.)—WALTER FIRTH, Read, Blackburn.
H. C.—740, 742, 742A.

Class 471.—*Old English Game Cocks or Cockerels, any other colour.* [25 entries.]

758 I. (30*s*.)—MRS. J. EDWARDS, Railway Hotel, Llandilo, S. Wales.
757 II. (20*s*.), & 765 III. (10*s*.)—J. R. CROMPTON, Greenhayes, Banstead, Surrey.
H. C.—756, 759, 762.

Class 472.—*Old English Game Hens or Pullets, any other colour.* [18 entries.]

773 I. (30*s*.)—JOHN WATSON, Eden Mount, Kendal, Westmorland.
783 II. (20*s*.)—J. R. CROMPTON, Greenhayes, Banstead, Surrey.
789 III. (10*s*.)—T. HOLMAN, 7 Rocks Street, Mountain Ash, Glamorgan.
H. C.—779, 782, 786.

Class 473.—*Indian Game Cocks or Cockerels.* [14 entries.]

794 I. (30*s*.)—A. S. AGNEW, Oversley, Morley, Wilmslow.
796 II. (20*s*.)—A. H. BROWNSON, Manor Court Road, Nuneaton.
800 III. (10*s*.)—W. YEO, Ebberley Arms, Bear Street, Barnstaple.
804 R. N.—J. H. BAKER & SONS, Windy Ash, Barnstaple.
H. C.—791, 797, 798, 801.

Class 474.—*Indian Game Hens or Pullets.* [17 entries.]

813 I. (30*s*.)—A. H. BROWNSON, Manor Court Road, Nuneaton.
820 II. (20*s*.), & 808A III. (10*s*.)—J. H. BAKER & SONS, Windy Ash, Barnstaple.
812 R. N.—F. E. BRAY, Manor Edwin, Bryncethin.
H. C.—805, 808, 811, 816.

Class 475.—*Modern Game Cocks or Cockerels, any colour.* [8 entries.]

828 I. (30*s*.), & 823 III. (10*s*.)—W. GARNE, Ablington, Fairford, Glos.
821 II. (20*s*.), & 827 R. N.—WALTER FIRTH, Read, Blackburn.
H. C.—826

Class 476.—*Modern Game Hens or Pullets, any colour.* [4 entries.]

832 I. (30*s*.), & 829 II. (20*s*.)—WALTER FIRTH, Read, Blackburn.
831 III. (10*s*.)—WILLIAMS BROS., Sardis Terrace, Waunarlwydd, Swansea, S. Wales.
830 R. N.—J. GREENFIELD & SON, White Mill, Abergwili, Carmarthen.

Class 477.—*Black Sumatra Game Cocks or Cockerels.* [6 entries.]

834 I. (30*s*., & Champion.[2])—G. DE MAID, 8 Brook Street, Blaenrhondda, Treherbert.
835 II. (20*s*.)—T. W. E. ROYDEN, Flegg Burgh, Norfolk.
837 III. (10*s*.)—H. EVANS, Severn View Place, Varteg, near Pontypool.
833 R. N—F. R. EATON, Cleveland House, Eaton, Norwich.

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[1] Special Prize given by the Russian Orloff Club for the best Russian Orloff in Classes 467 and 468.

[2] Special Prize of 5*s*. given by the Black Sumatra Game Fowl Club for the best Cock or Cockerel in Class 477.

Class 478.—*Black Sumatra Game Hens or Pullets.* [4 entries.]

839 I. (30*s*., & Champion.[1])—F. R. **EATON**, Cleveland House. Eaton, Norwich.
840 II. (20*s*.)—F. W S. **SPARROW**, Wellwood, Parkstone, Dorset.
842 III. (10*s*.)—**MAJOR MORRISON**, Basildon Home Farm, Pangbourne.
841 R. N.—G. **DE MAID**. 8 Brook Street, Blaenrhrondda, Treherbert.

Class 479.—*Minorca Cocks or Cockerels.* [9 entries.]

848 I. (30*s*.), & 843 II. (20*s*.)—W. **BINNIE**, Harviestoun, Dollar.
851 III. (10*s*.)—G. **CLEAVES**. The Oaks, Snatchwood, Abersychan.
849 R.N.—J. S. **TAGG**, Netherseal, Ashby-de-la-Zouch.
H. C.—846. C.—850.

Class 480.—*Minorca Hens or Pullets.* [19 entries.]

859 I. (30*s*.)—W. **BINNIE**, Harviestoun, Dollar.
870 II. (20*s*.)—**NICHOLLS & SON**. 12 Grove Road, Sunny Bank, Clydach-on-Tawe.
862 III. (10*s*.)—**FURSLAND BROS**., Bridgwater, Somerset.
860 R. N.—S. E. **PARKER**, 466 Bloxwich Road, Leamore, Walsall.
H. C.—861. C.—867.

Class 481.—*White Leghorn Cocks or Cockerels.* [6 entries.]

871 I. (30*s*.)—W. **MCGIBBON**, "Burside," Rolleston, Burton-on-Trent.
874 II. (20*s*.)—**MRS**. W. J. **WILCOX**, 69 Mount Pleasant Road, Ebbw Vale, Mon.
872 III. (10*s*.)—H. **SHORTER**, Cottesbrook, Wylde Green, Birmingham.
875 R. N.—**MISS** B. **ST. JOHN**, Slinfold, Horsham, Sussex.

Class 482.—*White Leghorn Hens or Pullets.* [18 entries.]

894 I. (30*s*.)—R. **ANTHONY**, Home Farm, Euxton, Chorley, Lancs.
884 II. (20*s*.)—T. **REES**, 8 Iver Terrace, Burry Port, Carmarthenshire.
892 III. (10*s*.)—J. **KAINE**, Penyfai Lodge, Llanelly, Carmarthenshire.
877 R.N.—**PEARSON BROS**., Birch Coppice, Brierley Hill, Staffs.
H. C.—885. C.—891.

Class 483.—*Brown Leghorn Cocks or Cockerels.* [6 entries.]

895 I. (30*s*.)—A. **WIDD**, Roan Cow Inn, Warrington.
899 II. (20*s*.)—R. **ANTHONY**, Home Farm, Euxton, Chorley, Lancs.
897 III. (10*s*.)—**JOHN JONES**, Poultry Farm, Crymmych, R.S.O., Pembrokeshire.
896 R. N.—R. **MCMILLAN**, Forty Acres Poultry Farm, Witch Road, Kilmarnock.
H. C.—900.

Class 484.—*Brown Leghorn Hens or Pullets.* [7 entries.]

902 I. (30*s*.), & 906 II. (20*s*.)—W **POTTS**, 377 High Street, Glossop, Derbyshire.
903 III. (10*s*.)—R. **ANTHONY**, Home Farm, Euxton, Chorley, Lancs.
901 R. N.—F. G. **EDWARDS**, 2. West Street, Pembroke.
H. C.—905. C.—907.

Class 485.—*Black Leghorn Cocks or Cockerels.* [8 entries.]

911 I. (30*s*.). & 909 II. (20*s*.)—W. **HURST**, South Terrace, Glossop.
915 III. (10*s*.), & 912 R. N.—A. H. **CATCHPOLE**, Gate House, Framlingham, Suffolk.
H. C.—913. C.—908.

Class 486.—*Black Leghorn Hens or Pullets.* [11 entries.]

926 I. (30*s*.), 917 II. (20*s*.), & 921 R. N.—W. **HURST**, South Terrace, Glossop.
923 III. (10*s*.)—J. **BOWER**, "The Bungalow," Peak Forest, viâ Stockport.
H. C.—919. C.—920.

Class 487.—*Leghorn Cocks or Cockerels, any other colour.* [5 entries.]

927 I. (30*s*.), & 930 II. (20*s*.)—E. **LL. SIMON**, Pembroke.
928 III. (10*s*.)—F. G. **EDWARDS**, 2 West Street, Pembroke.
929 R. N.—E. **GOODFELLOW**. Broad Oak, North Rode, Congleton.

Class 488.—*Leghorn Hens or Pullets, any other colour.* [1 entry.]

932 I. (30*s*.)—L. W. **ADAMS**, Red Barns Farm, Fareham, Hants.

Class 489.—*Sicilian Buttercup Cocks or Cockerels.* [11 entries.]

941 I. (30*s*., & Champion[2]), & 934 II. (20*s*).—**MRS. ARTHUR SHERSTON**, Otley Hall, Ipswich.
939 III. (10*s*.)—W. **RAY**, 60 West Street, Aspatria, Cumberland.
937 R. N.—W. **WILSON**, 35 Queen Mary's Road, Foleshill, Coventry.
H. C.—935.

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[1] Special Prize of 5*s*. given by the Black Sumatra Game Fowl Club for the best Hen or Pullet in Class 478.

[2] Special Prize given by the Sicilian Buttercup Club for the best Sicilian Buttercup in Classes 489 and 490.

Class 490.—*Sicilian Buttercup Hens or Pullets.* [8 entries.]

946 I. (30*s.*)—MRS. ARTHUR SHERSTON, Otley Hall, Ipswich.
945 II. (20*s.*), 948 III. (10*s.*), & 951 R. N.—F. E. DERHAM, Gables Poultry Farm, Doveridge, Derbyshire.
H. C.—949.

Class 491.—*Barred Plymouth Rock Cocks.* [15 entries.]

952 I. (30*s.*, & Champion.[1])—DR. E. S. JACKSON, Robin Hill, Carnforth, Lancs.
961 II. (20*s.*), & 954 R. N.—J. VINES, The Priory, Leonard Stanley, Stonehouse, Glos.
955 III. (10*s.*)—A. SOUTHERIN. 88 Burnley Road, Padiham, Lancs.
H. C.—964. C.—956, 957, 959.

Class 492.—*Barred Plymouth Rock Hens.* [13 entries.]

967 I. (30*s.*), 977 III. (10*s.*), & 974 R. N.—DR. E. S. JACKSON, Robin Hill, Carnforth, Lancs.
969 II. (20*s.*)—MRS. J. DREW, Plas Wilmont, Oswestry.
H. C.—971, 972, 975.

Class 493.—*Barred Plymouth Rock Cockerels.* [5 entries.]

984 I. (30*s.*, & 980 II. (20*s.*)—DR. E. S. JACKSON, Robin Hill, Carnforth, Lancs.
983 III. (10*s.*)—S. LAKE, Lower Judds Farm, Hayesden, Tonbridge, Kent.
981 R. N.—R. GARLICK, Kirkby Lonsdale, Westmoreland.
H. C.—982.

Class 494.—*Barred Plymouth Rock Pullets.* [7 entries.]

987 I. (30*s.*)—JOHN PENNINGTON, Heswall, Birkenhead.
985 II. (20*s.*), & 991 R. N.—DR. E. S. JACKSON, Robin Hill, Carnforth, Lancs.
989 III. (10*s.*)—C. FOSTER, Bee Nest, Casterton, Kirkby Lonsdale, Westmoreland.
H. C.—988.

Class 495.—*Buff Plymouth Rock Cocks or Cockerels.* [8 entries.]

997 I. (30*s.*, & Champion.[2])—H. SPENSLEY, Oaks Farm, Menston, viâ Leeds.
998 II. (20*s.*)—MRS G. HUGHES, Brynheulog, Grovesend, Pontardulais, Glam.
996 III. (10*s.*)—J. WHITAKER, Cresswell Villas, Albion Road, New Mills, Newtown.
994 R. N.—J. C. OWRAM, Church Street, Darton, Barnsley, Yorks.
H. C.—995.

Class 496.—*Buff Plymouth Rock Hens or Pullets.* [6 entries.]

1005 I. (30*s.*)—H. SPENSLEY, Oaks Farm, Menston, viâ Leeds.
1003 II. (20*s.*)—R. SHAKESPEARE, 113 Hobmoor Road, Small Heath, Birmingham.
1001 III. (10*s.*)—MRS TERROT, Wispington House, Cookham, Berks.
1000 R. N.—DR. E. S. JACKSON, Robin Hill, Carnforth, Lancs.
H. C.—1002, 1004.

Class 497.—*Plymouth Rock Cocks or Cockerels, any other colour.* [7 entries.]

1006 I. (30*s.*, & Champion[3])—CAPT. E. DUCKWORTH, 19 Cearns Road, Oxton, Birkenhead.
1008 II. (20*s.*)—WILLIAM FOOTE, Springfield Poultry Farm, Armthorpe, Doncaster.
1010 III. (10*s.*)—L. HODGSON, Armthorpe, Doncaster.
1007 R. N.—A. C. MARFITT, Orchard Rockeries, 41 Burgate, Pickering, Yorks.
H. C.—1012.

Class 498.—*Plymouth Rock Hens or Pullets, any other colour.* [9 entries.]

1021 I. (30*s.*), & 1016 II. (20*s.*)—WILLIAM FOOTE, Springfield Poultry Farm, Armthorpe, Doncaster, Yorks.
1013 III. (10*s.*, & Champion.[4])—H. GARLICK, Oak Tree Farm, Bentham, Yorks.
1015 R. N.—DR. E. S. JACKSON, Robin Hill, Carnforth, Lancs.
H. C.—1014, 1017, 1018, 1020. C.—1019.

Class 499.—*Scots Dumpy Cocks or Cockerels.* [6 entries.]

1022 I. (30*s.*, & Champion[5]), & 1025 II. (20*s.*)—J. E. KERR, Harviestoun Castle, Dollar.
1026 III. (10*s.*), & 1024 R. N.—JOHN MAJOR, Ditton, Langley, Bucks.
H. C.—1027. C.—1023.

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[1] Special Prize given by the Barred Plymouth Rock Club for the best Barred Plymouth Rock in Classes 491-494.

[2] Special Prize given by the Buff Plymouth Rock Club for the best Buff Plymouth Rock in Classes 495 and 496.

[3] Special Prize given by the Plymouth Rock Society for the best White Plymouth Rock in Classes 497 and 498.

[4] Special Prize given by the Plymouth Rock Society for the best Black or Blue Plymouth Rock in Classes 497 and 498.

[5] Special Prize of 1 *s.* 6*d.* given by the Scots Dumpy Club for the best Scots Dumpy in Classes 499 and 500.

Class 500.—*Scots Dumpy Hens or Pullets.* [8 entries.]

1033 I. (30s.), & 1028 R. N.—J. E. KERR, Harviestoun Castle, Dollar.
1035 II. (20s.)—W. REID & SON, Hallcraig House, Airdrie.
1030 III. (10s.)—JOHN MAJOR, Ditton, Langley, Bucks.
H. C.—1032, 1034. C.—1029.

Class 501.—*Ancona Cocks or Cockerels.* [14 entries.]

1040 I. (30s.)—TOM WILLIAMS, Church House, Manordilo, South Wales.
1048 II. (20s.)—SAUNDERS & DAVIES, 24 Shady Road, Gelli Ystrad, Rhondda Valley.
1044 III. (10s.)—W. HARPER, "Melrose," Garndiffaith, near Pontypool, Mon.
1047 R. N.—E. NEWALL, Gravel, Winsford, Cheshire.
H. C.—1036. C.—1041.

Class 502.—*Ancona Hens or Pullets.* [20 entries.]

1065 I. (30s.)—G. JONES, Glanymor, Windsor Esplanade, Docks, Cardiff.
1054 II. (20s.), & 1062 III. (10s.)—J. JONES, Pentre Celyn, 26 Woods Row, Carmarthen.
1059 R. N.—E. NEWALL, Gravel, Winsford, Cheshire.
H. C.—1067. C.—1053.

Class 503.—*Yokohama Cocks or Cockerels.* [4 entries.]

1072 I. (30s., & Champion.[1])—R. SCOTT MILLER, Clydeneuk, Uddingston, Glasgow.
1073 II. (20s.)—MRS. L. C. PRIDEAUX, Spring Cottage, Lindfield, Haywards Heath
1070 III. (10s.)—ROBERT L. MOND, J.P., Combe Bank, Sevenoaks, Kent.

Class 504.—*Yokohama Hens or Pullets.* [4 entries.]

1076 I. (30s.)—MRS. L. C. PRIDEAUX, Spring Cottage, Lindfield, Haywards Heath, Sussex.
1077 II. (20s.), & 1074 R. N.—R. SCOTT MILLER, Clydeneuk, Uddingston, Glasgow.
1075 III. (10s.)—ROBERT L. MOND, J.P., Combe Bank, Sevenoaks, Kent.

Class 505.—*Cocks or Cockerels, any other distinct variety except Bantams.* [15 entries.]

1082 I. (30s.)—H. FORTUNE, Banklands, Silsden, viâ Keighley. (Hamburgh.)
1078 II. (20s.)—J. ROBERTS, Mayfield, Silsden, viâ Keighley. (Hamburgh.)
1090 III. (10s.)—A. S. AGNEW, Oversley, Morley, Wilmslow. (Malay.)
1079 R. N.—T. LEWIS, 4 Buttry Terrace, Fleur-de-lis, Pengam, Cardiff. (Golden Polish.)
H. C.—1089. C.—1080.

Class 506.—*Hens or Pullets, any other distinct variety except Bantams.* [16 entries.]

1095 I. (30s.)—J. STEWART, Woodend Cottage, Whins, Alloa. (Scots Grey.)
1103 II. (20s.)—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.
1109 III. (10s.)—J. H. BAKER & SONS, Windy Ash, Barnstaple. (Malay.)
1097 R. N.—W. GRAVES, 26 Ogury Street, Nantymoel, Glam. (Black Poland.)
H. C.—1108. C.—1106.

Ducks.

Class 507.—*Aylesbury Drakes or Ducks, bred prior to* 1919. [6 entries.]

1112 I. (30s.)—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.
1110 II. (20s.), & 1115 III. (10s.)—MAJOR DAVID DAVIES, M.P., Broneirion, Llandinam.

Class 508.—*Aylesbury Drakes or Ducks, bred in* 1919. [No entry.]

Class 509.—*Rouen Drakes or Ducks, bred prior to* 1919. [10 entries.]

1119 I. (30s.)—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.
1123 II. (20s.)—MASTER A. E. BREWIN, "Brynhyfryd," Babell, Holywell.
1122 III. (10s.)—MR. & MRS. E. F. HURT, South Darley, Matlock.
1117 R. N.—T. W. ROWSE, Colcomfort, Alcester, Warwickshire.
H. C.—1118. C.—1120.

Class 510.—*Rouen Drakes or Ducks, bred in* 1919. [2 entries.]

1126 I. (30s.)—J. S. HEPBURN, South Farm, Arbury, Nuneaton, Warwickshire.
1127 II. (20s.)—R. ALTY, Buckshaw Hall, Euxton, Chorley, Lancs.

Class 511.—*Indian Runner Drakes or Ducks, bred prior to* 1919. [16 entries.]

1129 I. (30s.)—W. G. KINGWELL, Dartmoor Poultry Farm, South Brent.
1141 II. (20s.)—S. J. HAWKINS, Ninewells, near Coleford, Glos.
1136 III. (10s.)—REV. W. SERJEANTSON, Acton Burnell Rectory, Shrewsbury.
1130 R. N.—A. H. FOX-BROCKBANK, The Croft, Kirksanton, Cumberland.
H. C.—1133, 1134. C.—1139, 1142.

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[1] Silver Medal given by the Yokohama Club for the best Yokohama in Classes 503 and 504.

Class 512.—*Indian Runner Drakes or Ducks, bred in* 1919. [4 entries.]

1147 I. (30s.)—REV. W. SERJEANTSON, Acton Burnell Rectory, Shrewsbury.
1146 II. (20s.), & 1148 III. (10s.)—W. G. KINGWELL, Dartmoor Poultry Farm, South Brent.

Class 513.—*Drakes or Ducks, any other variety, bred prior to* 1919. [5 entries.]

1149 I. (30s.)—R. S. WILLIAMSON, The Grange, Hednesford.
1150 II. (20s.)—MRS. M. A. GRANT, Westlands, Burstow, Horley, Surrey.
1151 III. (10s.)—MR. & MRS. E. F. HURT, South Darley, Matlock.
1153 R. N.—W. RICHARDSON, 13 Bootham Crescent, York.

Class 514.—*Drakes or Ducks, any other variety, bred in* 1919. [4 entries.]

1156 I. (30s.), & 1154 II. (20s.)—W. G. KINGWELL, Dartmoor Poultry Farm, South Brent.

Geese.

Class 515.—*Embden Ganders.* [6 entries.]

1158 I. (30s.)—LADY HARLECH, Brogyntyn, Oswestry, Salop.
1161 II. (20s.)—W. F. SNELL, Marsh Farm, Yeovil.
1160 III. (10s.)—ABBOT BROS., Thuxton, Norfolk.
1159 R. N.—A. H. FOX-BROCKBANK, The Croft, Kirksanton, Cumberland.

Class 516.—*Embden Geese.* [7 entries.]

1169 I. (30s.)—J. D. BEAK, Newmead, Maiden Bradley, Bath.
1167 II. (20s.)—A. H. FOX-BROCKBANK, The Croft, Kirksanton, Cumberland.
1168 III. (10s.)—ABBOT BROS., Thuxton, Norfolk.
1165 R. N.—W. F. SNELL, Marsh Farm, Yeovil.
H. C.—1164. C.—1170.

Class 517.—*Toulouse Ganders.* [7 entries.]

1171 I. (30s.)—W. MACGIBBON, "Burside," Rolleston, Burton-on-Trent.
1177 II. (20s.)—J. S. HEPBURN, South Farm, Arbury, Nuneaton, Warwickshire.
1174 III. (10s.)—H BICKFORD, Standeford, Four Ashes, Wolverhampton.
1172 R. N.—C. K. CLARKE, Harwood Lodge, Bolton.
H. C.—1175.

Class 518.—*Toulouse Geese.* [4 entries.]

1181 I. (30s.)—J. S. HEPBURN, South Farm, Arbury, Nuneaton, Warwickshire.
1178 II. (20s.)—W. MACGIBBON, "Burside," Rolleston, Burton-on-Trent.
1179 III. (10s.)—ABBOT BROS., Thuxton, Norfolk.
1180 R. N.—H. BICKFORD, Standeford, Four Ashes, Wolverhampton.

Turkeys.

Class 519.—*White Turkey Cocks or Cockerels.* [4 entries.]

1182 I. (30s.)—MISSES RANSFORD, Woollerton Poultry Farm, Market Drayton.
1184 II. (20s.)—H. L. POPHAM, Hunstrete House, Pensford, Bristol.
1183 III. (10s.)—MRS. C. I. EVANS, Court of Noke, Pembridge.

Class 520.—*White Turkey Hens or Pullets.* [6 entries.]

1188 I. (30s.)—MRS. C. I. EVANS, Court of Noke, Pembridge.
1186 II. (20s.)—LADY HARLECH, Brogyntyn, Oswestry, Salop.
1189 III. (10s.)—MISS SIBELL M. CORBETT, Stableford, Bridgnorth, Shropshire.
1187 R. N.—MISSES RANSFORD, Woollerton Poultry Farm, Market Drayton.
H. C.—1191.

Class 521.—*Turkey Cocks, any other variety.* [3 entries.]

1193 I. (30s.)—ABBOT BROS., Thuxton, Norfolk.
1192 II. (20s.)—MAJOR J. Y. BALDWIN, D.S.O., North Lodge, East Coker, Yeovil.
1194 III. (10s.)—THOMAS ABBOT, Wymondham.

Class 522.—*Turkey Hens, any other variety.* [2 entries.]

1196 I. (30s.)—THOMAS ABBOT, Wymondham.
1195 II. (20s.)—ABBOT BROS., Thuxton, Norfolk.

Bantams.

Class 523.—*Sebright Bantam Cocks or Cockerels.* [8 entries.]

1202 I. (30s.)—J. C. PRESTON, Bay House, Ellel, Lancaster.
1201 II. (20s.)—REV. W. SERJEANTSON, Acton Burnell Rectory, Shrewsbury.
1200 III. (10s.)—R. BENNETT, 60 Butts, Frome, Somerset.
1203 R. N.—MRS. KENNETH WARD, Tweed Villa, Haxby, near York.
H. C.—1199, 1204. C.—1197.

Class 524.—*Sebright Bantam Hens or Pullets.* [11 entries.]

1209 **I.** (30*s.*)—REV. W. SERJEANTSON, Acton Burnell Rectory, Shrewsbury.
1216 **II.** (20*s.*)—R. BENNETT, 60 Butts, Frome, Somerset.
1215 **III.** (10*s.*)—MRS. KENNETH WARD, Tweed Villa, Haxby, near York.
1207 **R. N.**—MISS B. BENNETT, East Hill, Westbury-on-Trym, Bristol.
H. C.—1205, 1211. **C.**—1208, 1214.

Class 525.—*Wyandotte Bantam Cocks or Cockerels.* [9 entries.]

1222 **I.** (30*s.*), & 1218 **R. N.**—A. HENSHAW, Norman Road, Ripley, Derbyshire.
1220 **II.** (20*s.*)—H. H. PHILLIPS, 49 Triangle, Bath.
1217 **III.** (10*s.*)—J. F. ENTWISLE, Crigglestone Manor, Wakefield.
H. C.—1219, 1221, 1224. **C.**—1225.

Class 526.—*Wyandotte Bantam Hens or Pullets.* [11 entries.]

1228 **I.** (30*s.*)—J. F. ENTWISLE, Crigglestone Manor, Wakefield.
1232 **II.** (20*s.*), & 1236 **R. N.**—F. ROBINSON, Hoyland Common, Barnsley.
1227 **III.** (10*s.*)—H. H. PHILLIPS, 49 Triangle, Bath.
H. C.—1234, 1235. **C.**—1226, 1229.

Class 527.—*Scotch Grey Bantam Cocks or Cockerels.* [7 entries.]

1237 **I.** (30*s.*), & 1242 **R. N.**—J. D. JOHNSTON, "Norwood," Albert Avenue, Sedgley Park Prestwich, Lancs.
1240 **II.** (20*s.*)—J. STEWART, Woodend Cottage, Whins, Alloa.
1238 **III.** (10*s.*)—J. MCCRAE, 13 Thomson Street, Kilmarnock.
H. C.—1243. **C.**—1239.

Class 528.—*Scotch Grey Bantam Hens or Pullets.* [7 entries.]

1250 **I.** (30*s.*), & 1245 **III.** (10*s.*)—J. MCCRAE, 13 Thomson Street, Kilmarnock.
1244 **II.** (20*s.*)—J. D JOHNSTON, "Norwood," Albert Avenue, Sedgley Park, Prestwich.
1246 **R. N.**—J. CARSWELL, 148 Graham Road, Falkirk.
H. C.—1247. **C.**—1249.

Class 529.—*Old English Game Bantam Cocks or Cockerels.* [21 entries.]

1268 **I.** (30*s.*)—J. DAWSON, Backridge, near Clitheroe, Lancs.
1255 **II.** (20*s.*)—F. LEWIS, 104 Birchgrove Road, Porth, S. Wales.
1254 **III.** (10*s.*)—BASSETT & DAVIES, 7 Garth Street, Kenfy, Bridgend.
H. C.—1252, 1258, 1264, 1266, 1270, 1271.

Class 530.—*Old English Game Bantam Hens or Pullets.* [19 entries.]

1289 **I.** (30*s*).—J. DAWSON, Backridge, near Clitheroe, Lancs.
1285 **II.** (20*s.*)—A. H. BROWNSON, Manor Court Road, Nuneaton.
1273 **III.** (10*s.*)—J. F. ENTWISLE, Crigglestone Manor, Wakefield.
1278 **R. N.**—G. JONES, Glanymor, Windsor Esplanade, Docks, Cardiff.
H. C.—128[illegible], 1288.

Class 531.—*Modern Game Bantam Cocks or Cockerels, any colour.* [7 entries.]

1291 **I.** (30*s.*)—WALTER FIRTH Read, Blackburn.
1292 **II.** (20*s.*)—J. J. PLEACE, 1 Mount Joy Place, Newport, Mon.
1297 **III.** (10*s.*)—ROBINSON & WIGHTMAN, 108 Forest Street, East Kirkby, Notts.
1294 **R. N.**—MISS PIMBLEY, 19 St. John's Crescent, Canton, Cardiff.

Class 532.—*Modern Game Bantam Hens or Pullets, any colour.* [11 entries.]

1304 **I.** (30*s.*)—MISS PIMBLEY, 19 St. John's Crescent, Canton, Cardiff.
1302 **II.** (20*s.*)—CAPT. T. M. WHITTAKER, Gairwin House, Criccieth.
1300 **III.** (10*s.*)—J. J. PLEACE, 1 Mount Joy Place, Newport, Mon.
1307 **R. N.**—MORGAN & SON, 41 Bush Road, Morriston, Glam.

Class 533.—*Black or White Rosecomb Bantam Cocks or Cockerels.* [2 entries.]

1310 **I.** (30*s.*)—J. A. FEATHER, Drabble House, Silsden, viâ Keighley.
1309 **II.** (20*s.*)—ALLEN & SONS, 6 Trafalgar Terrace, Ystrad Rhondda.

Class 534.—*Black or White Rosecomb Bantam Hens or Pullets.* [4 entries.]

1314 **I.** (30*s.*)—MISS PEGGY WILLIAMS, The Carlton, Llanwrtyd Wells.
1313 **II.** (20*s.*)—J. W. CARTER, Massabielle, Garstang, Lancs.
1312 **III.** (10*s.*)—J. A. FEATHER, Drabble House, Silsden, viâ Keighley.

Class 535.—*Barbu d'Anvers Cocks or Cockerels.* [7 entries.]

1319 **I.** (30*s.*)—F. BREARLEY, 6 Hazel Street, Bulwell, Nottingham.
1315 **II.** (20*s.*), & 1321 **III.** (10*s.*)—MRS. TERROT, Wispington House, Cookham, Berks.
1317 **R. N.**—C. T. BIEGEL, "The Nook," Croxley Green, Herts.
H. C.—1316. **C.**—1320.

Class 536.—*Barbu d'Anvers Hens or Pullets.* [7 entries.]

1325 I. (30s., & Champion[1]), & 1322 III. (10s.)—MRS. TERROT, Wispington House, Cookham.
1326 II. (20s.)—F. BREARLEY, 6, Hazel Street, Bulwell, Nottingham.
1323 R. N.—F. J. S. CHATTERTON, 34 Elm Park Road, Finchley, London, N.3.
H. C.—1324. C.—1327.

Class 537.—*Cochin or Pekin Bantam Cocks or Cockerels.* [5 entries.]

1330 I. (30s.)—D. B. CHESTERFIELD, Rock House, Glynneath, Glam.
1329 II. (20s.)—R. S. WILLIAMSON, The Grange, Hednesford.
1332 III. (10s.)—A. HENSHAW, Norman Road, Ripley, Derbyshire.
1331 R. N.—GEORGE H. PROCTER, Flass House, Durham.
H. C.—1333.

Class 538.—*Cochin or Pekin Bantam Hens or Pullets.* [5 entries.]

1334 I. (30s.)—R. S. WILLIAMSON, The Grange, Hednesford.
1337 II. (20s.)—GEORGE H. PROCTER, Flass House, Durham.
1338 III. (10s.)—R. A. DARLINGTON, Chevelode Farm, Malvern, Worcestershire.
1336 R. N.—A. HENSHAW, Norman Road, Ripley, Derbyshire.
H. C.—1335.

Class 539.—*Yokohama Bantam Cocks or Cockerels.* [3 entries.]

1339 I. (30s., & Champion[2]), & 1341 II. (20s.)—F. J. S. CHATTERTON, 34 Elm Park Road Finchley, London, N.3.
1340 III. (10s.)—MRS. L. C. PRIDEAUX, Spring Cottage, Lindfield, Haywards Heath.

Class 540.—*Yokohama Bantam Hens or Pullets.* [3 entries.]

1344 I. (30s.), & 1342 II. (20s.)—F. J. S. CHATTERTON, 34 Elm Park Road, Finchley.
1343 III. (10s.)—MRS. L. C. PRIDEAUX, Spring Cottage, Lindfield, Haywards Heath.

Class 541.—*Japanese Bantam Cocks or Cockerels.* [5 entries.]

1345 I. (30s.), & 1348 III. (10s.)—MAJOR G. T. WILLIAMS, Tredrea, Perranwell, Cornwall.
1349 II. (20s.)—F. & O. ROBINSON, 3 Hardings Road, Keighley.
1346 R. N.—MISS B. PERKIN, Lane House, Walton Avenue, Bognor.
H. C.—1347.

Class 542.—*Japanese Bantam Hens or Pullets.* [7 entries.]

1350 I. (30s.)—LADY HARLECH, Brogyntyn, Oswestry, Salop.
1351 II. (20s.), & 1355 III. (10s.)—MAJOR G. T. WILLIAMS, Tredrea, Perranwell.
1354 R. N.—F. & O. ROBINSON, 3 Hardings Road, Keighley.
H. C.—1353. C.—1352 1356.

Class 543.—*Bantam Cocks or Cockerels, any other variety.* [9 entries.]

1359 I. (30s.)—W. R. BEER, Pill Farm, Barnstaple.
1362 II. (20s.)—M. DAVID, St. Donats, Llantwit Major, Glam.
1366 III. (10s.)—A. H. BROWNSON, Manor Court Road, Nuneaton.
1357 R. N.—MAJOR G. T. WILLIAMS, Tredrea, Perranwell, Cornwall.
H. C.—1361, 1363. C.—1360, 1365.

Class 544.—*Bantam Hens or Pullets, any other variety.* [17 entries.]

1374 I. (30s.) E. G. EVELEIGH, 32 Newland Street, Barry, Glam.
1376 II. (20s.)—MAJOR G. T. WILLIAMS, Tredrea, Perranwell, Cornwall.
1368 III. (10s.)—W. R. BEER, Pill Farm, Barnstaple.
1383 R. N.—MRS. KENNETH WARD, Tweed Villa, Haxby, near York.
H. C.—1369, 1372, 1377. C.—1379, 1381.

RABBITS.

Belgian Hares.[3]

Class 545.—*Belgian Hare Adult Bucks.* [17 entries.]

13 I. (30s., & R. N. for Champion.[4])—J. BARAGWANATH, 88 Alcester Road, Moseley, Birmingham.
17 II. (20s.)—H. WALKER, Market Street, Wells, Somerset.
3 III. (10s.)—JOHN COTTLE, 1 Crown Row, Cwmbach, Aberdare.
7 R. N.—F. A. MARSH, 11 Eveswell Street, Maindee, Newport, Mon.
H. C.—12. 15.

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[1] Special Prize given by the Belgian Bearded Bantam Club for the best Blue Barbu d'Anvers in Classes 535 and 536.

[2] Silver Medal given by the Yokohama Club for the best Yokohama Bantam in Classes 539 and 540.

[3] Special Prizes were given by the National Belgian Hare Club to the First Prize Winners in Classes 545-550.

[4] The Newberry Challenge Trophy given by the National Belgian Hare Club for the best Belgian Hare in Classes 545-550.

Class 546.—*Belgian Hare Adult Does.* [11 entries.]

22 I. (30s.)—H. J. SUKER, 203 Park Lane, Tottenham, London, N.17.
18 II. (20s.) & 25 R. N.—MRS. S. E. WILLBE, 33 High Street, Fareham, Hants.
26 III. (10s.)—J. BARAGWANATH, 88 Alcester Road, Moseley, Birmingham.
H. C.—21, 23. C.—19, 24.

Class 547.—*Belgian Hare Bucks, under six months.* [4 entries.]

31 I. (30s.)—P. E. GREENING, Cowley Villa, Hockmore Street, Cowley, Oxford
29 II. (20s.)—A. S. BELLINGER, 6 Little Britain, Dorchester.

Class 548.—*Belgian Hare Does, under six months.* [9 entries].

38 I. (30s., & Champion.[1])—J. BARAGWANATH, 88 Alcester Road, Moseley, Birmingham.
41 II. (20s.)—P. E. GREENING, Cowley Villa, Hockmore Street, Cowley, Oxford,
33 III. (10s.)—A. S. BELLINGER 6 Little Britain, Dorchester.
34 R. N.—F. BREWER, Natal House, Hadlow, Tonbridge.
H. C.—39.

Class 549.—*Belgian Hare Bucks, under four months.* [8 entries.]

46 I. (30s.)—T. SKEATS, Whitchurch, Cardiff.
48 II. (20s.)—MRS. S. E. WILLBE, 33 High Street, Fareham, Hants.
49 III. (10s.)—F. BREWER, Natal House, Hadlow, Tonbridge
47 R. N.—HENRY WATTS, 21 Station Street, Treherbert, Glam.
H. C.—42.

Class 550.—*Belgian Hare Does, under four months.* [9 entries.]

53 I. (30s.)—Mrs. S. E. WILLBE, 33 High Street, Fareham, Hants.
57 II. (20s.)—F. BREWER, Natal House, Hadlow, Tonbridge.
58 III. (10s.)—A. WORSFOLD, Ruspidge, near Cinderford, Glos.
56 R. N.—W. E. WALLINGTON, Lydiard Millicent, near Swindon.
H. C.—50. C.—51.

Flemish Giants.

Class 551.—*Flemish Giant Adult Bucks.* [5 entries.]

60 I. (30s.)—SIDNEY JEFFRIES, 25 Treharne Road, Cadoxton, Barry.
61 II. (20s.)—G. THOMAS, 4 Parry Street, Canton, Cardiff.

Class 552.—*Flemish Giant Adult Does.* [10 entries.]

70 I. (30s.)—MRS. C. L. HERBERT, Clytha Park, Abergavenny.
68 II. (20s.)—GREEN & HILL, 28 Topary Street, Cardiff.
72 III. (10s.)—J. PERRETT, Commercial, Pontymister, near Newport, Mon.

Class 553.—*Flemish Giant Bucks or Does, under six months.* [5 entries.]

78 I. (30s.)—W. H. HOWARD & SON, Apethorpe, Peterborough.
76 II. (20s.)—WALTER COOK, 39 Market Road, Canton, Cardiff.

Class 554.—*Flemish Giant Bucks or Does, under four months.* [5 entries.]

81 I. (30s.) & 83 II. (20s.)—F. GREVETT, The Pines, Slindon Common, near Arundel.
80 III. (10s.)—G. THOMAS, 4 Parry Street, Canton, Cardiff.

English.

Class 555.—*English Adult Bucks or Does.* [19 entries.]

97 I. (30s., & R. N. for Champion.[2])—G. A. DRAKE South Street, Braunton, N. Devon.
98 II. (20s.)—F. W. EDMONDS, 59 Holton Road, Barry Dock, Glam.
87 III. (10s.)—J. SHERBORNE, Elm Farm, Pamber, near Basingstoke.
95 R. N.—A. E. VEAL, 8 Cornwall Street, Grange, Cardiff.
H. C.—88, 94.

Class 556.—*English Bucks or Does, under five months* [21 entries.]

114 I. (30s., & Champion.[2])—J. SHERBORNE, Elm Farm, Pamber, near Basingstoke.
116 II. (20s.)—J. J. EATON, 71 Mill Street, Bolton.
105 III. (10s.) G. H. HARRIS, 3 Hudds Hill, St George, Bristol.
112 R. N.—WILBRAHAM & SON, 7 Brynawel, Nantybwch, Tredegar.
H. C.—106, 107, 110, 115, 123. C.—117.

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[1] The Newberry Challenge Trophy given by the National Belgian Hare Club for the best Belgian Hare in Classes 545-550.

[2] Special Prize given by the National English Rabbit Club for the best English Rabbit in Classes 555 and 556.

Dutch.

Class 557.—*Dutch Adult Bucks or Does.* [11 entries.]

126 I. (30s., & Champion.[1])—W. E. PARRY, Merton Abbey Merton Road, Bootle.
132 II. (20s.) W. W. BOOZER, Union Flag Hotel, Maidstone.
130 III. (10s.)—W. J. JORDAN, 4 Marine Terrace, Oystermouth, Swansea.
129 R. N.—THOMPSON & SPURGEON, 75 Whitefield Terrace, Heaton, Newcastle-on-Tyne.
H.C.—131, 134.

Class 558.—*Dutch Bucks or Does, under five months.* [20 entries.]

146 I. (30s.)—SUTHERLEY BROS., Whitehall Buildings, Tredegar, Mon.
140 II. (20s.)—W. E. PARRY, Merton Abbey, Merton Road, Bootle.
150 III. (10s.)—FRANK EADY, Ashville, 43 Gibbs Road, Newport, Mon.
149 R. N.—MRS. F. M. DREAPER, Melton Ross, Barnetby, Lincs.
H. C.—137, 144, 151.

Angoras.

Class 559.—*Angora Bucks or Does, any age.* [7 entries.]

160 I. (30s.)—T. THACKER & SON, 23 North Villiers Street, Leamington Spa.
158 II. (20s.)—D. A. ROSENTHAL, 509 City Road, Edgbaston, Birmingham.
159 III. (10s.)—H. J. SUKER, 203 Park Lane, Tottenham, London, N.17.
161 R. N.—F. HANMER, The Beeches, Heeley Road Selly Oak, Birmingham.

Blue Beverens.

Class 560.—*Blue Bevern Bucks or Does, any age.* [24 entries.]

180 I. (30s.) & 174 III. (10s.)—CAPT. R. MAYER, Collington Manor Rabbitry, near Bexhill.
167 II. (20s.) & 171 R. N.—Mrs. A. M. HEYWOOD, Bericote, Malvern Wells.
H. C.—162, 165, 166, 182.

Silver.

Class 561.—*Silver Grey Adult Bucks.* [9 entries.]

186 I. (30s.)—H. R. HALLIDAY, 108 Goddard Avenue, Swindon.
191 II. (20s.), & 194 R. N.—E. O. DAVIES & SON, 8 The Hill, Kirkby-in-Ashfield, Notts.
188 III. (10s.)—F. W. WESTERN, J.P., Holme Grove, Biggleswade.
H. C.—187, 189.

Class 562.—*Silver Grey Adult Does.* [9 entries.]

196 I. (30s., & Champion.[2])—SAMUEL LAMB, 25 Peel Green Road, Barton-on-Irwell, Patricroft, Manchester.
199 II. (20s.)—W. JAMESON, Alverton, Headless Cross, Redditch.
197 III. (10s.)—F. W. WESTERN, J.P., Holme Grove, Biggleswade.
202 R. N.—F. KERSWILL, 9 Bulstrode Mews, Marylebone Lane, London, N.W.
H. C.—195, 203.

Class 563.—*Silver Grey Bucks or Does, under five months.* [14 entries.]

204 I. (30s.)—W. H. GREENLESS, Lily Bank, Davyhulme, near Manchester.
214 II. (20s.)—B. SANDERSON, 35 Northumberland Street, West Hartlepool.
215 III. (10s.)—PILKINGTON & HOWARTH, 20 Albert Street, Mumps, Oldham.
216 R. N.—SLATER & SON, 42 Lyons Colliery, Hetton-le-Hole, S.O., Co. Durham.
H. C.—210, 211.

Class 564.—*Adult Silver Bucks or Does, any other colour.* [14 entries.]

218 I. (30s., & Champion.[3])—J. W. BROWN, 8 Graham Terrace, New Shildon, Co. Durham.
223 II. (20s., & Champion.[4])—F. W. WESTERN, J.P., Holme Grove, Biggleswade.
222 III. (10s.)—JAMES & SON, 87 Queen Street, Nantyglo, Mon.
226 R. N.—M. MORGAN, Full Moon Inn, Cardiff Road, Aberdare.
H.C.—221, 224, 227, 228.

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[1] Special Prize given by the United Kingdom Dutch Rabbit Club for the best Dutch Rabbit in Classes 557 and 558.

[2] Special Prize of 10s. 6d. given by the National Silver Rabbit Club for the best Adult Silver Grey Rabbit.

[3] Special Prize of 10s. 6d. given by the National Silver Rabbit Club for the best Adult Silver Fawn Rabbit.

[4] Special Prize of 10s. 6d. given by the National Silver Rabbit Club for the best Silver Rabbit under five months old, any colour.

Class 565.—*Silver Bucks or Does, under five months, any other colour.* [19 entries.]

233 I. (30*s*., & Champion.[1])—**F. W. WESTERN**, J.P., Holme Grove, Biggleswade.
232 II. (20*s*.)—**WALTER COOK**, 39 Market Road, Canton, Cardiff.
247 III. (10*s*.)—**C. DAVIES**, Gwynfa Cottage, Cadwgan Avenue, Old Colwyn.
244 R. N.—**W. R. ROBINSON**, 60 Mayfield Street, Spring Bank, Hull.
H. C.—234, 238, 239, 242, 243.

Lops.

Class 566.—*Lop Bucks or Does, any age.* [3 entries.]

252 I. (30*s*.)—**FREDERICK GILES**, 66 Hurst Street, Oxford.
251 II. (20*s*.)—**FRANK EADY**, Ashville, 43 Gibbs Road, Newport, Mon.
253 III. (10*s*.)—**J. T. HALBY**, 6 Reservoir Road, Pellon, Halifax.

Tans.

Class 567.—*Tan Bucks or Does, any age.* [12 entries.]

257 I. (30*s*., & Champion[2]), 263 III. (10*s*.), & 254 R. N.—**SMITH & SON**, Hanbury Rabbitry, 95 West Street, Bargoed.
256 II. (20*s*.)—**COOPER BROS.**, Popes Green Farm, Polstead, Suffolk.
H.C.—260, 264.

Polish.

Class 568.—*Polish Bucks or Does, under six months.* [13 entries.]

277 I. (30*s*., & Champion[3]), & 273 II. (20*s*.)—**DR. A. WAUGH**, Glendyne, Preston Hill, Birkenhead.
267 III. (10*s*.), & 274 IV. (5*s*.)—**E. A. BRAITHWAITE**, Brownberrie Manor, Horsforth, near Leeds.
268 R. N.—**H. DANCER**, Church Street, Leatherhead.
H. C.—275. C.—269, 270.

FARM AND DAIRY PRODUCE OF THE UNITED KINGDOM.

Butter.

Class 569.—*Two Pounds of Fresh Butter, without any salt, made up in plain pounds, from the milk of Channel Island, Devon, or South Devon Cattle and their crosses.* [18 entries.]

17 I. (£4.)—**MRS. JOHN WAY**, West Bridge, Bishops Nympton, South Molton, N. Devon.
18 II. (£2.)—**MISS LUCY YELD**, Dorstone House, Dilwyn, Leominster.
10 III. (£1.)—**MISS MARGARET E. JENKINS**, Llantwit Vardre Vicarage, Pontypridd.
14 R. N.—**WILLIAM G. M. TOWNLEY**, Hard Crag, Grange-over-Sands, Lancs.
H. C.—11.

Class 570.—*Two Pounds of Fresh Butter, without any salt, made up in plain pounds, from the milk of Cattle of any breed or cross other than those mentioned in Class* 569. [23 entries.]

26 I. (£4.)—**MISS RACHEL JAMES**, Llancayo, Usk, Mon.
40 II. (£2, & S.P. £4.[4])—**MRS. W. WATTS**, Ty-draw, Llantrithyd, Cowbridge, Glam.
37 III. (£1.)—**R. W. J. SUTHERLAND**, Gadairwen, Croesfain, Glam.
39 (R. N., & S.P. £2.[4])—**MRS. EDWARD WATTS**, Ty Ucha, Llantrithyd, Cowbridge, Glam.
35 (H. C., & S.P £1.[4])—**MRS. M. E. ROGERS**, Burry Farm, Reynoldston, Glam.
C.—25.

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[1] Special Prize of 10*s*. 6*d*. given by the National Silver Rabbit Club for the best Adult Silver Brown Rabbit.

[2] Special Prize of 5*s*. given by the Tan Club for the best Tan in Class 567.

[3] Special Prize given by the National Polish Rabbit Club for the best Polish Rabbit in Class 568.

[4] Special Prizes of £4, £2, and £1 given by the Glamorgam County Council for the best Butter in Class 569 or 570 made by residents in the administrative County of Glamorgam, who have attended the County Council Travelling Dairy School or the Dairying Courses at the University College, Cardiff.

Class 571.—*Two Pounds of Fresh Butter, slightly salted, made up in plain pounds, from the milk of Channel Island, Devon, or South Devon Cattle and their crosses.* [28 entries.]

66 I. (£4.)—MRS. JOHN WAY, West Bridge, Bishops Nympton, South Molton, N. Devon.
68 II. (£2.)—MRS. HERBERT WYKEHAM, Bourton House, Rugby.
57 III. (£1.)—MRS. L. R. MILDON, Mead Farm, Rackenford, N. Devon.
51 R. N.—THE HON. A. HOLLAND-HIBBERT, Watford, Herts.
H. C.—69. C.—58.

Class 572.—*Two Pounds of Fresh Butter, slightly salted, made up in plain pounds, from the milk of Cattle of any breed or cross other than those mentioned in Class* 571. [37 entries.]

99 I. (£4.)—MISS URWIN, Dunskins Farm, Wolsingham, Co. Durham.
90 II. (£2.)—MISS C. L. OWEN, Cwmhowell Farm, Llannon, S.O.
82 III. (£1, & S.P. £3.[1])—MISS RACHEL JAMES, Llancayo, Usk, Mon.
78 (S.P. £2.[1])—MISS MAY EVANS, Red House Farm, Penpergam, Abergavenny.
72 (Equal Prize MISS BLODWEN DAVIES, Trevine Llantilio, Crosenny, Abergavenny.
80 of 15s.[1]) MISS EDITH JAMES, Llancayo, Usk, Mon.
101 R. N.—MRS. W. WATTS, Ty-draw, Llantrithyd, Cowbridge, Glam.
H. C.—71.

Class 573.—*Three Pounds of Fresh Butter, slightly salted, made up in pounds in the most attractive marketable designs.* [12 entries.]

112 I. (£4.)—MRS. L. R. MILDON, Mead Farm, Rackenford, N Devon.
116 II. (£2.)—MRS. JOHN WAY, West Bridge, Bishops Nympton, South Molton, N. Devon.
114 III. (£1, & S.P. £4.[2])—MRS. E. WATTS, Ty Ucha, Llantrithyd, Cowbridge, Glam.
107 (R. N., & S. P. £2.[2])—MISS CILIAN EDWARDS, Cefn Poeth Farm, Lanvedw, Cardiff.
115 (H. C., & S.P. £1.[2])—MRS. W. WATTS, Ty-draw, Llantrithyd, Cowbridge, Glam.
C.—109.

Class 574.—*Three Pounds of Fresh Butter, slightly salted, made up in pounds, and packed in non-returnable boxes for transmission by rail or parcel post.* [7 entries.]

122 I. (£4.)—MRS. L. R. MILDON, Mead Farm, Rackenford, N. Devon.
118 II. (£2.)—MRS. A. A. BERE, Stoodleigh Barton, Tiverton.
119 III. (£1.)—LADY ANGELA FORBES, Warley Lea, Great Warley, Brentwood, Essex.
123 R. N.—MRS. JOHN WAY, West Bridge, Bishops Nympton, South Molton, N. Devon.

Class 575.—*Three Pounds of Whey Butter, made up in plain pounds, without any admixture of cream or milk other than Separated Milk.* [No entry.]

Class 576.—*Two Pounds of Fresh Butter, made up in plain pounds, from the milk of Goats of any breed.* [No entry.]

Cheese.

Made in 1919.

Class 577.—*Three Cheshire Cheeses, Coloured, not less than 40 lb. each.* [8 entries.]

130 I. (£5.)—F. A. MOORE, Checkley, Nantwich.
131 II. (£3.)—G. E. RICHARDS, Knockin Hill Farm, Oswestry.
125 III. (£2.) CHARLES F. HOBSON, Weston Hall, Eccleshall, Staffs.
127 R. N.—W. R. LEA, Manor Farm, Hatherton, Nantwich.
C.—128.

Class 578.—*Three Cheshire Cheeses, Uncoloured, not less than 40 lb. each.* [8 entries.]

139 I. (£5.)—F. A. MOORE, Checkley, Nantwich.
140 II. (£3.)—G. E. RICHARDS, Knockin Hill Farm, Oswestry.
135 III. (£2.)—CHARLES F. HOBSON, Weston Hall, Eccleshall, Staffs.
138 R. N.—F. MITCHELL, Summerhill Farm, Whitgreave, Stafford.
C.—136.

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[1] Special Prizes of £3, £2, £1 and 10s., given by the Monmouthshire Education Committee for the best Butter in Classes 571 or 572, made in Monmouthshire by a student of the Monmouthshire Dairy and Cheese Schools.

[2] Special Prizes of £4, £2 and £1, given by the Glamorgan County Council for the best Butter in Class 573, made by residents in the administrative County of Glamorgan, who have attended the County Council Travelling Dairy School or the Dairying Courses at the University College, Cardiff.

Class 579.—*Three Cheddar Cheeses, not less than 50 lb. each.* [14 entries.]

154 I. (£5.)—ALEXANDER WYLLIE, Mossgiel, Mauchline, Ayrshire.
144 II. (£3.)—ALEXANDER CROSS, Knockdon Farm, Maybole, Ayrshire.
151 III. (£2.)—A. HARVEY STEVENSON, Lag, Ayr.
141 R. N.—BEN R. BROUGHTON, Manor Farm, North Perrott, Crewkerne.
H. C.—150. C.—148.

Class 580.—*Three Cheddar Truckles.* [10 entries.]

155 I. (£4.)—BEN R. BROUGHTON, Manor Farm, North Perrott, Crewkerne.
164 II. (£2.)—ALEXANDER WYLLIE, Mossgiel, Mauchline, Ayrshire.
159 III. (£1.)—ALEXANDER CROSS, Knockdon Farm, Maybole, Ayrshire.
160 R. N.—THOMAS LOGAN, Low Milton, Maybole, Ayrshire.
H. C.—157. C.—161.

Class 581.—*Three Double Gloucester Cheeses, not less than 22 lb. each.* [2 entries.]

166 I. (£5.)—THE CHEDDAR VALLEY DAIRY COMPANY, LTD., Rooksbridge Factory Axbridge.
165 R. N.—F. G. BUTCHER, Barley Hill Farm, Poulshot, Devizes.

Class 582.—*Three Single Gloucester Cheeses, not less than 13 lb. each.* [1 entry.]

167 I. (£4.)—F. G. BUTCHER, Barley Hill Farm, Poulshot, Devizes.

Class 583.—*Three North Wiltshire Truckles.* [1 entry.]

168 I. (£4.)—F. G. BUTCHER, Barley Hill Farm, Poulshot, Devizes.

Class 584.—*Three Stilton Cheeses.* [6 entries.]

169 I. (£4.)—COLIN AND CO., LTD., John o' Gaunt Dairy, Melton Mowbray.
173 II. (£2.)—HENRY MORRIS, Manor Farm, Saxelbye, Melton Mowbray.
172 III. (£1.)—LONG CLAWSON DAIRY, LTD., Melton Mowbray.
171 R. N.—GEORGE GOODBOURN, Nether Broughton, Melton Mowbray.

Class 585.— *Three Wensleydale Cheeses, Stilton Shape.* [6 entries.]

178 I. (£4.)—ALFRED ROWNTREE, The Dairy, Coverham, Middleham, Yorks.
176 II. (£2, & S.P. £3.[1])—MISS RACHEL JAMES, Llancayo, Usk, Mon.
177 III. (£1.)—MISS B. J. MUDD, The Aldboro Dairy, Boroughbridge, Yorks.
179 R. N.—ARTHUR F. SOMERVILLE, Dinder House, Dinder, Wells, Somerset.

Class 586.—*Three Caerphilly Cheeses, about 9 lb. each, above 3 and not exceeding 4 inches in thickness.*[2] [8 entries.]

187 I. (£4.)—ARTHUR F. SOMERVILLE, Dinder House, Dinder, Wells, Somerset.
185 II. (£2, & S.P. £3.[4])—MISS CISSIE JOHNSON, Llanddews Court, Abergavenny.
181 III. (£1, & S.P. £2[3].)—MISS CILIAN EDWARDS, Cefn Poeth Farm, Lanvedw, Cardiff.
186 R. N.—ARTHUR GEORGE SAY, Badgworth, Axbridge, Somerset.
C.—188.

Class 587.—*Three Caerphilly Cheeses, about 6 lb. each, not exceeding 3 inches in thickness.* [16 entries.]

204 I. (£4.)—WEST OF ENGLAND CREAMERY, Highbridge, Somerset.
191 II. (£2, & S.P. £4.[3])—MISS CILIAN EDWARDS, Cefn Poeth Farm, Lanvedw, Cardiff.
193 III. (£1.)—MRS. J. H. EVANS, Tydraw Farm, Pencoed, Glam.
198 (H. C., & S.P. £2.[4])—MRS. J. JAMES, Green Court, Llanellen, Abergavenny.
192 (C., & S.P. £1.[4])—MRS. L. W. EDWARDS, Blackbirds Nest Farm, Bassaleg, Newport, Mon.
203 (S. P. £1.[3])—MRS. E. WATTS, Ty Ucha, Llantrithyd, Cowbridge.
197 (S.P. 10s.[4])—MISS RACHEL JAMES, Llancayo, Usk, Mon.

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[1] Special Prize of £3, given by the Monmouthshire Education Committee for the best exhibit in Class 585, made in Monmouthshire by a student of the Monmouthshire Dairy and Cheese Schools.

[2] Prizes given by the Cardiff Local Committee.

[3] Special Prizes of £4, £2 and £1, given by the Glamorgan County Council for the best exhibits of Caerphilly Cheeses in Class 586 or 587, made by residents in the administrative County of Glamorgan, who have attended the County Council Travelling Dairy School or the Dairying Courses at University College, Cardiff.

[4] Special Prizes of £3, £2, £1 and 10s., given by the Monmouthshire Education Committee for the best exhibits in Class 586 or 587, made in Monmouthshire by a student of the Monmouthshire Dairy and Cheese Schools.

Class 588.—*Three Small Cheeses, not exceeding 6 lb. each, of Cheddar or Cheshire Character.* [13 entries.]

216 I. (£3.)—MISS FLORRIE RAWLE, South Quarme Farm, Wheddon Cross, Taunton.
210 II. (£2.)—MRS. E. M. EVANS, Welshers Farm, Clatworthy, Wiveliscombe.
217 III. (£1.)—G. E. RICHARDS, Knockin Hill Farm, Oswestry.
208 R. N.—MISS KATHLEEN M. CLAPP, Manor Farm, Oake, Taunton.
H. C.—206. C.—205.

Class 589.—*Three Small Cheeses, not exceeding 6 lb. each, of Stilton or Wensleydale Character.* [6 entries.]

218 I. (£3.)—MISS ELSIE G. COOK, Ashford Farm, Ashford, Middlesex.
222 II. (£2.)—ALFRED ROWNTREE, The Dairy, Coverham, Middleham, Yorks.
220 III. (£1.)—LONG CLAWSON DAIRY, LTD., Melton Mowbray.
221 R. N.—MISS B. J. MUDD, The Aldboro Dairy, Boroughbridge Yorks.

Class 590.—*Three Soft Cheeses made from Whole Milk.* [13 entries.]

225 I. (£3.)—MISS ELSIE G. COOK, Ashford Farm, Ashford, Middlesex.
230 II. (£2.)—MRS. W. HOWARD PALMER, Murrell Hill, Binfield, Berks.
227 III. (£1.)—MISS SIBELL M. CORBETT, Stableford, Bridgnorth, Salop.

Class 591.—*Three Soft Cheeses made from Cream without the addition of Rennet.* [6 entries.]

239 I. (£3.)—LADY ANGELA FORBES, Warley Lea, Great Warley, Brentwood, Essex.
240 II. (£2.)—MRS. W. HOWARD PALMER, Murrell Hill, Binfield, Berks.
238 III. (£1.)—MRS. WILLIAM COOPER, The Prize Dairy, Wollaston, Wellingborough.
237 R. N.—MISS KATHLEEN M. CLAPP, Manor Farm, Oake, Taunton.

Class 592.—*Two Cheeses, not exceeding 6 lb. each, made from Goat's milk,* [1 entry.] [No Award.]

Bacon and Hams.[1]

Class 593.—*Two Sides of Bacon, pale dried, Wiltshire style, with Ham attached.* [2 entries.]

245 II. (£2.)—JAMES H. ISMAY, Iwerne Minster, Blandford.
244 III. (£1.)—THOMAS FOSTER, 27 Church Street, Ormskirk.

Class 594.—*Two Sides of Bacon, smoke dried, Wiltshire style, with Ham attached.* [1 entry.]

246 II. (£2.)—JAMES H. ISMAY, Iwerne Minster, Blandford.

Class 595.—*Two Sides of Bacon, pale dried, Wiltshire style, Hamless.* [1 entry.]

H. C.—247.

Class 596.—*Two Sides of Bacon, smoke dried, Wiltshire style, Hamless.* [1 entry.]

248 II. (£2.)—JAMES H. ISMAY, Iwerne Minster, Blandford.

Class 597.—*Two Sides of Bacon, cured in the Cumberland style, Hamless.* [1 entry.]

249 I. (£3.)—JOHN JOHNSON & SONS, Brick-kiln Lane, Banks, Southport.

Class 598.—*Two Hams, pale dried, not exceeding 14 lb. weight.* [3 entries.]

252 I. (£3.)—JOHN JOHNSON & SONS, Brick-kiln Lane, Banks, Southport.
250 II. (£2.)—THOMAS FOSTER, 27 Church Street, Ormskirk.
H.C.—251.

Class 599.—*Two Hams, smoke dried, not exceeding 14 lb. weight.* [1 entry.]

253 II. (£2.)—JAMES H. ISMAY, Iwerne Minster, Blandford.

Class 600.—*Two Hams, pale dried, exceeding 14 lb. weight.* [3 entries.]

255 I. (£3.)—JAMES H. ISMAY, Iwerne Minster, Blandford.
256 II. (£2.)—JOHN JOHNSON & SONS, Brick-kiln Lane, Banks, Southport.
254 III. (£1.)—THOMAS FOSTER, 27 Church Street, Ormskirk.

Class 601.—*Two Hams, smoke dried, exceeding 14 lb. weight.* [1 entry.]

257 I. (£3.)—JAMES H. ISMAY, Iwerne Minster, Blandford.

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[1] Classes 593 to 601 are open only to Breeders, who need not necessarily have cured their exhibits. Classes 602 to 606 are open only to Curers, who need not necessarily have bred the animals from which the exhibits have been taken.

Class 602.—*Two Sides of Bacon, pale dried, Wiltshire style, with Ham attached.* [2 entries.]

258 I. (£3.)—HERTS. AND BEDS. BACON FACTORY, LTD., Hitchin.
259 III. (£1.)—JAMES H. ISMAY, Iwerne Minster, Blandford.

Class 603.—*Two Sides of Bacon, smoke dried, Wiltshire style, with Ham attached.* [2 entries.]

260 I. (£3.)—HERTS. AND BEDS. BACON FACTORY, LTD., Hitchin.
261 II. (£2.)—JAMES H. ISMAY, Iwerne Minster, Blandford.

Class 604.—*Two Sides of Bacon, cured in the Cumberland style, Hamless.* [1 entry.]
[No award.]

Class 605.—*Two Hams, pale dried.* [2 entries.]

264 I. (£3.)—JOHN JOHNSON & SONS, Brick-kiln Lane, Banks, Southport
263 II. (£2.)—THOMAS FOSTER, 27 Church Street, Ormskirk.

Class 606.—*Two Hams, smoke dried.* [No entry.]

Cider and Perry.

N.B.—The names of the Fruits from which the Cider or Perry is stated by the Exhibitor to have been made are added after the address of the Exhibitor.

Class 607.—*Casks of Dry Cider, not less than* 9, *and not more than* 18 *gallons, made in* 1918. [2 entries.]

266 I. (£3.)—RIDLER & SON, Clehonger Manor, Hereford. (Mixed Fruit.)
265 II. (£2, & S.P.[1])—WILLIAM D. LANE, White House, Llanvetherine, Abergavenny. (Mixed Fruit.)

Class 608.—*Casks of Sweet Cider, not less than* 9, *and not more than* 18 *gallons, made in* 1918. [3 entries.]

267 I. (£3.)—HERBERT J. DAVIS, Goldsborough Farm, Sutton Montis, Sparkford, Somerset. (Royal and White Jerseys, Davis Favourite, and Cap of Liberty.)
268 II. (£2.)—HERBERT J. DAVIS. (Masters Jersey, White Jersey, Horner and Kingston Black.)

Class 609.—*Casks of Cider, not less than* 9, *and not more than* 18 *gallons, made previous to* 1918. [2 entries.]
[No award.]

Class 610.—*One Dozen Bottles of Dry Cider, made in* 1918. [2 entries.]
[No award.]

Class 611.—*One Dozen Bottles of Sweet Cider, made in* 1918. [5 entries.]

275 I. (£3.)—HERBERT J. DAVIS, Goldsborough Farm, Sutton Montis, Sparkford, Somerset. (Royal and White Jerseys. Davis Favourite, and Cap of Liberty.)
277 II (£2.)—RIDLER & SON, Clehonger Manor, Hereford. (Kingston Black.)
274 III. (£1.)—HERBERT J. DAVIS. (Masters Jersey, White Jersey, Horners and Kingston Black.)
278 R. N.—RIDLER & SON. (Fox Whelp and Kingston Black.)

Class 612.—*One Dozen Bottles of Cider, made previous to* 1918. [9 entries.]

284 I. (£3, Champion £2,[2] & S.P.[3])—WILLIAM D. LANE, White House, Llanvetherine, Abergavenny. (1, 3, Yellow, Normans and Fredericks.)
280 II. (£2, & R. N. for Champion.[2])—SIR IAN HEATHCOAT AMORY, BART., Knightshayes, Tiverton, Devon. (Mixed Fruit.)
285 III (£1.)—QUANTOCK VALE CIDER COMPANY, LTD., North Petherton, Bridgwater. (Mostly Kingston Black.)
286 R. N.—RIDLER & SON, Clehonger Manor, Hereford. (Mixed Fruit).
H. C.—281.

Class 613. *One Dozen Bottles of Dry Perry.* [No entry.]

Class 614.—*One Dozen Bottles of Sweet Perry.* [1 entry.]

288 I. (£3.)—HENRY MASON, Cross Keys, Withington, Hereford. (Taynton Squash.)

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[1] Special Prize of £3 given by the Monmouthshire Education Committee for the best exhibit in Classes 607-609.

[2] Challenge Cup given by the Cider Growers of the West of England for the best exhibit of Cider in Classes 607-612.

[3] Special Prize of £3 given by the Monmouthshire Education Committee for the best exhibit in Classes 610-612 of any year's vintage, made by a Cider Maker in Monmouthshire who has received instruction from the County Cider Instructor.

Bottled and Preserved Fruits, Bottled Vegetables, and Jams.

Open to Amateurs only.

Class 615.—*Three Varieties of Fruit bottled in syrup, selected from Red or Yellow Plums, Greengages, Pears, Cherries and Raspberries.* [3 entries.]

290 I. (30s.)—MISS FLORENCE M. JOHNSON, Treadam, Abergavenny. (Pears, Raspberries and Plums.)
289 II. (20s.)—MISS ELSIE G. COOK, Ashford Farm, Ashford, Middlesex. (Bryanston Gage Plums, Pears and Cherries.)
291 III. (10s.)—MRS. M. E. PARLOUR, Croft, Darlington. (Plums, Greengages, Pears, Cherries and Raspberries.)

Class 616.—*Six Varieties of Fruit bottled in water, selected from Red Plums, Yellow Plums, Victoria Plums, Greengages, Pears, Apples, Damsons and Cherries.* [No entry.]

Class 617.—*Six Varieties of Soft Fruit, bottled in water, selected from Gooseberries, Raspberries, Loganberries, Blackberries, Black Currants, Red Currants, Raspberries and Red Currants Mixed.* [1 entry.]

292 I. (£3.)—MRS. M. E. PARLOUR, Croft, Darlington.

Class 618.—*Three Varieties of Fruit, bottled in water, selected from Red or Victoria Plums, Yellow Plums, Pears, Greengages, Damsons, and Cherries.* [3 entries.]

294 I. (30s.)—THOMAS THOMAS, Schoolhouse, Bishton, Newport, Mon. (Victoria Plums, Yellow Plums and Pears.)
295 II. (20s.)—GEORGE W. WEATHERILL, Belmont, Stokesley, Yorks. (Cherries, Victoria and Yellow Plums.)
293 III. (10s.)—MRS. M. E. PARLOUR, Croft, Darlington.

Class 619.—*Three Varieties of Soft Fruit, bottled in water, selected from Gooseberries, Raspberries, Loganberries, Blackberries, Black Currants, Red Currants, Raspberries and Red Currants mixed.* [2 entries.]

297 I. (30s.)—THOMAS THOMAS, Schoolhouse, Bishton, Newport, Mon. (Raspberries, Blackberries and Black Currants.)

Class 620.—*Rhubarb, bottled in water.* [2 entries.]

299 I. (20s.)—THOMAS THOMAS, Schoolhouse, Bishton, Newport, Mon.
298 II. (10s.)—MRS. M. E. PARLOUR, Croft, Darlington.

Class 621.—*Twelve varieties of Fruit bottled in water.* [No entry.]

Class 622.—*Three Varieties of Vegetables, bottled in water, selected from Peas, Broad Beans, Kidney Beans, Asparagus, and Tomatoes.* [2 entries.]

301 I. (30s.)—MRS. M. E. PARLOUR, Croft, Darlington.

Class 623.—*Three 2 lb. Jars of Pickled Vegetables, selected from Onions, Shallots, Gherkins or Cabbage.* [No entry.]

Class 624.—*Three 2 lb. Jars of Mixed Pickles.* [No entry.]

Class 625.—*Five distinct kinds of Jam, made from fruit grown in the United Kingdom.* [No entry.]

Class 626.—*Three distinct kinds of Jam, made from fruit grown in the United Kingdom.* [1 entry.]

302 III. (10s.)—MRS. IVOR BAKER, The Ton, Tredunnock, Llangibby, Newport, Mon. (Strawberry, Gooseberry and Rhubarb.)

Class 627.—*Three kinds of Jam made from Vegetable Marrow, flavoured with Ginger, Lemon, Orange, or some other flavouring.* [No entry.]

Class 628.—*Three kinds of Jam made from Rhubarb alone, or from Rhubarb mixed with other Fruit.* [No entry.]

Class 629.—*Two kinds of Marmalade, made from Oranges, Lemons or Quinces.* [2 entries.]

303 I. (30s.)—MISS ELSIE G. COOK, Ashford Farm, Ashford, Middlesex. (Orange and Lemon Marmalade.)
304 II. (20s.)—THOMAS THOMAS, Schoolhouse, Bishton, Newport, Mon. (Orange Marmalade.)

Class 630.—*Three distinct kinds of Fruit Jellies, made from fruit grown in the United Kingdom.* [1 entry.]

C.—305.

Dried Fruits and Vegetables.

Class 631.—*Two varieties of Dried Fruits, in* 1 *lb. tins or packets, selected from Apples, Pears, Apricots or Peaches.* [No entry.]

Class 632.—*Two varieties of Dried Fruits, in* 1 *lb. tins or packets, selected from Plums, Damsons, Black or Red Currants.* [No entry.]

Class 633.—*Three varieties of Dried Vegetables, in* 1 *lb. tins or packets, selected from Beetroots, Carrots, Parsnips, Turnips, Peas or Beans.* [No entry.]

Wool.[1]

Of 1919 *Clip.*

Class 634.—*Three Fleeces of Oxford Down Wool.* [4 entries.]

308 I. (£3), & 309 II. (£2.)—H. W. STILGOE, The Grounds, Adderbury, Banbury.
307 III. (£1.)—HENRY AKERS & CO., Moat House, Black Bourton, Clanfield, S.O., Oxon.

Class 635.—*Three Fleeces of Shropshire Wool.* [5 entries.]

314 I. (£3.)—EDMUND CRAIG TANNER, Eyton-on-Severn, Shrewsbury.
310 II. (£2.) RICHARD ELWYN BIRCH, Maes Elwy, St. Asaph, Flints.

Class 636.—*Three Fleeces of Southdown Wool.* [5 entries.]

319 I. (£3), & 318 II. (£2.)—LADY WERNHER, Luton Hoo, Luton.
315 III. (£1.)—SIR JEREMIAH COLMAN, BART., Gatton Park, Surrey.

Class 637.—*Three Fleeces of Hampshire Down Wool.* [No entry.]

Class 638.—*Three Fleeces of Dorset Horn Wool.* [6 entries.]

325 I. (£3.)—ALFRED READ, Hilton, Blandford.
324 II. (£2.)—ALFRED MASTERS, Plush, Dorchester.
323 III. (£1.)—G. A. & R. A. KINGSWELL, Wellow Farm, Yarmouth, Isle of Wight.

Class 639.—*Three Fleeces of Ryeland Wool.* [13 entries.]

338 I. (£3), & 337 III. (£1.)—DAVID J. THOMAS, Talachddu, Brecon.
335 II. (£2.)—J. F. RICKETTS, Trebarried, Talgarth, Breconshire.

Class 640.—*Three Fleeces of Kerry Hill (Wales) Wool.* [7 entries.]

339 I. (£3.)—WILLIAM ALDERSON, Glanmiheli, Kerry, Newtown, Mont.
344 II. (£2.)—THE EARL OF POWIS, Powis Castle, Welshpool.
342 III. (£1.)—CAPT. JOHN MURRAY NAYLOR, Leighton Hall, Welshpool.

Class 641.—*Three Fleeces of Lincoln Long Wool.* [1 entry.]

346 I. (£3.)—THOMAS SPINK & SONS, Hunmanby, Yorks.

Class 642.—*Three Fleeces of Border Leicester Wool.* [3 entries.]

347 I. (£3.)—R. G. MURRAY & SON, Spital, Biggar.
349 II. (£2), & 348 III. (£1.)—W. J. & E. PRINGLE, Branton, Glanton, Northumberland.

Class 643.—*Three Fleeces of Wensleydale Blue-Faced Wool.* [4 entries.]

351 I. (£3), & 350 II. (£2.)—LORD HENRY BENTINCK, M.P., Underley Hall, Kirkby Lonsdale.
352 III. (£1.)—T. PARLOUR, Middle Farm, Dalton-on-Tees, Darlington.

Class 644.—*Three Fleeces of Kent or Romney Marsh Wool, from Rams of any age.* [5 entries.]

358 I. (£3.)—J. EGERTON QUESTED, The Firs, Cheriton, Kent.
354 II. (£2), & 355 III. (£1.)—L. H. & G. W. FINN, Westwood Court, Faversham.

Class 645.—*Three Fleeces of Kent or Romney Marsh Wool, excluding rams.* [12 entries.]

366 I. (£3.)—WALTER MISKIN, White Hall, Hoo, Rochester.
362 II. (£2.)—L. H. & G. W. FINN, Westwood Court, Faversham.
368 III. (£1.)—R. STANLEY STROUTS, Singleton Manor, Great Chart, Ashford.

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[1] The Second and Third Prizes in Classes 634-649 were given by the respective Flock Book Societies.

Class 646.—*Three Fleeces of Cotswold Wool.* [2 entries.]

372 I. (£3.)—William Garne, Ablington, Fairford, Glos.
371 II. (£2.)—Colonel Edwin P. Brassey, The Manor Farm, Upper Slaughter, Glos.

Class 647.—*Three Fleeces of Dartmoor Wool.* [3 entries.]

375 I. (£3.)—W. A. Johns & Sons, Cleave, Kelly, Lifton, Devon.
374 II. (£2), & 373 III. (£1.)—John H. Glover, Delamore Farm, Cornwood, S. Devon.

Class 648.—*Three Fleeces of Exmoor Horn Wool.* [3 entries.]

377 I. (£3,) & 376 II. (£2.)—Percy Smyth, Broford, Dulverton, Somerset.
378 III. (£1.)—D. J. Tapp, Highercombe, Dulverton, Somerset.

Class 649.—*Three Fleeces of Welsh Mountain Wool.* [5 entries.]

379 I. (£3.)—J. F. Ricketts, Trebarried, Talgarth, Breconshire.
380 II. (£2.) & 381 III. (£1.)—University College of North Wales, College Farm, Aber, Bangor.

Class 650.—*Three Fleeces of First Cross between Two Distinct Breeds of Short Wool.* [No entry.]

Class 651.—*Three Fleeces of First Cross between Two Distinct Breeds of Long Wool.* [2 entries.]

385 I. (£3), & 384 II. (£2.)—John J. Peirson, Tanton Farm, Stokesley, Yorks.

Class 652.—*Three Fleeces of First Cross of any Long and Short Wool.* [2 entries.]

386 I. (£3.)—R. R. Gribble, Gabriel Farm, Edenbridge.

Class 653.—*Three Fleeces of wool of First Cross of Pure-bred Sheep, of which one must be Mountain or Moorland.* [No entry.]

HIVES, HONEY, AND BEE APPLIANCES.

Class 1.—*Collections of Hives and Appliances.* [3 entries.]

[No award.]

Class 2.—*Best and Most Complete Frame Hives for General Use, unpainted.* [6 entries.]

[No award.]

Class 3.—*Most Complete and Inexpensive Frame Hives for Cottager's Use, unpainted.* [3 entries.]

[No award.]

Class 4.—*Honey Extractors.* [3 entries.]

[No award.]

Class 5.—*Any appliances connected with Bee-keeping.*

[No entry.]

Honey.

Class 6.—*Comb Honey.*[1] [2 entries.]

[No Award.]

Class 7.—*Light Extracted Honey.* [3 entries.]

[No Award.]

Class 8.—*Medium Extracted Honey.* [2 entries.]

22 I. (12*s.* 6*d.*)—C. Spiller, Cresta, St. Fagans, near Cardiff.
21 II. (10*s.*)—F. Gravil, 11 Ninian Road, Cardiff.

Class 9.—*Collective Exhibits.*

[No entry.]

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[1] Entries in Classes 6-10 can only be made by Members of the Glamorganshire Bee-keepers' Association.

Class 10.—*Comb Honey.*[1] [2 entries.]

[No Award.]

Class 11.—*Extracted Light-coloured Honey.* [8 entries.]

26 I. (15*s.*)—J. BIRKETT, Blundells Lane, Rainhill, Lancashire.
30A II. (10*s.*)—R. HANCOCK, 1 Railway Terrace, Rogiet.
29 III. (5*s.*)—J. PEARMAN, Penny Long Lane, Derby.
H. C.—25, 30.

Class 12.—*Extracted Medium or Dark-coloured Honey.* [2 entries.]

31A I. (15*s.*)—MRS. LLEWELLIN MORGAN, Underwood, Portskewell, Chepstow.

Class 13.—*Granulated Honey.* [2 entries.]

33 I. (15*s.*)—J. PEARMAN, Penny Long Lane, Derby.

Class 14.—*Comb Honey.*[2] [5 entries.]

35 I. (15*s.*)—G. BRYDEN, 46 Star Hill, Rochester, Kent.
38 II. (10*s.*)—W. J. GOODRICH, 2 Oxford Street, Gloucester.

Class 15.—*Extracted Light-coloured Honey.* [5 entries.]

41 I. (15*s.*)—W. J. GOODRICH, 2 Oxford Street, Gloucester.
39 II. (10*s.*)—G. BRYDEN, 46 Star Hill, Rochester, Kent.
42A III. (5*s.*)—H. E. C. CARTER, 73 St. John's Park, Blackheath, S.E.3.

Class 16.—*Extracted Medium or Dark-coloured Honey.* [5 entries.]

44 I. (15*s.*)—G. BRYDEN, 46 Star Hill, Rochester, Kent.
47 II. (10*s.*)—A. E. WARREN, Bletchley, Bucks.

Class 17.—*Granulated Honey.* [3 entries.]

48 I. (15*s.*)—G. BRYDEN, 46 Star Hill, Rochester, Kent.
50 II. (10*s.*)—W. J. GOODRICH, 2 Oxford Street, Gloucester.

Class 18.—*Three Shallow Frames of Comb Honey, for extracting, gathered during* 1919. [5 entries.]

51 I. (15*s.*)—G. BRYDEN, 46 Star Hill, Rochester, Kent.
54 II. (10*s.*)—W. J. GOODRICH, 2 Oxford Street, Gloucester.

Class 19.—*Heather Honey.* [3 entries.]

57 I. (15*s.*)—M. J. LAMBOLL, Liddinghurst, Chiddingfold, Surrey.
56 II. (10*s.*)—W. DIXON, 27 Central Road, Leeds.
58 III. (5*s.*)—J. PEARMAN, Penny Long Lane, Derby.

Class 20.—*Heather Mixture Extracted Honey.* [1 entry.]

59 I. (15*s.*)—J. PEARMAN, Penny Long Lane, Derby.

Class 21.—*Best and Most Attractive Displays of Honey.* [2 entries.]

60 I. (25*s.*)—G. BRYDEN, 46, Star Hill, Rochester, Kent.

Class 22.—*Exhibits of not less than 2 lb. of Beeswax.* [6 entries.]

66 I. (7*s.* 6*d.*)—J. PEARMAN, Penny Long Lane, Derby.
65 II. (5*s.*)—MRS. E. M. HEATH, Barh Hill, Bewdley.
64 III. (2*s.* 6*d.*)—W. J. GOODRICH, 2 Oxford Street, Gloucester.

Class 23.—*Exhibits of not less than 3 lb. of Beeswax.* [3 entries.]

70 I. (7*s.* 6*d.*)—J. PEARMAN, Penny Long Lane, Derby.
69 II. (5*s.*)—W. J. GOODRICH, 2 Oxford Street, Gloucester.

Class 24.—*Honey Vinegar.* [4 entries.]

73A I. (5*s.*)—G. BRYDEN, 46 Star Hill, Rochester, Kent.
73 II. (2*s.* 6*d.*)—J. PEARMAN, Penny Long Lane, Derby.
71 III. (Certificate of Merit)—W. J. GOODRICH, 2 Oxford Street, Gloucester.

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[1] Entries in Classes 10-13 can only be made by residents in Cheshire, Cumberland, Derbyshire, Durham, Herefordshire, Lancashire, Leicestershire, Lincolnshire, Monmouthshire, Northumberland, Nottinghamshire, Rutland, Shropshire, Staffordshire, Warwickshire, Westmorland, Worcestershire, Yorkshire, the Isle of Man, Ireland, Scotland, or Wales.

[2] Entries in Classes 14-17 can only be made by residents in Bedfordshire, Berkshire, Buckinghamshire, Cambridgeshire, Cornwall, Devon, Dorset, Essex, Gloucestershire, Hampshire, Hertfordshire, Huntingdonshire, Isle of Wight, Kent, Middlesex, Norfolk, Northamptonshire, Oxfordshire, Somerset, Suffolk, Surrey, Sussex, or Wiltshire.

Class 25.—*Mead.* [4 entries.]

74 I. (5*s.*)—**G. Bryden**, 46 Star Hill, Rochester, Kent.
76 II. (2*s.* 6*d.*)—**J. Pearman**, Penny Long Lane, Derby.
75 III. (Certificate of Merit)—**W. J. Goodrich**, 2 Oxford Street, Gloucester.

Class 26.—*Exhibits of a practical or interesting nature connected with Bee-culture.* [3 entries.]

79A I. (5*s.*)—**H. E. C. Carter**, 73 St. John's Park, Blackheath, S.E.3.

Class 27.—*Exhibits of a scientific nature, not mentioned in the foregoing Classes.*

[No entry.]

HORTICULTURAL EXHIBITION.

Class 1.—*Groups of Miscellaneous Plants in and out of bloom.* [3 entries.]

1 I. (£30.)—**James Cypher & Sons**, Cheltenham.
2 II. (£25.)—**W. A. Holmes**, West End Nurseries, Chesterfield.
3 III. (£15.)—**Sidney H. Byass** (Gardener, R. German), Llandough Castle, Cowbridge, Glam.

Class 2.—*Collections of Orchids, arranged for effect.* [1 entry.]

4 I. (£10.)—**James Cypher & Sons**, Cheltenham.

Class 3.—*Collections of Delphiniums.* [1 entry.]

5 I. (£3.)—**Blackmore & Langdon**, Twerton-on-Avon, Bath.

Class 4.—*Groups of Tuberous Begonias in Pots.* [1 entry.]

6 I. (£15, & Gold Medal.)—**Blackmore & Langdon**, Twerton-on-Avon, Bath.

Class 5.—*Collections of Hardy Perennial Plants and Cut Blooms, Roses and Shrubs excluded.* [3 entries.]

7 I. (£20.)—**Artindale & Sons**, Nether Green Nurseries, Sheffield.
8A II. (£15.)—**C. J. Ellis**, Knightstone Road, Weston-super-Mare.
8 III. (£10.)—**Harkness & Sons**, Bedale.

Class 6.—*Collections of Cut Sprays of Carnations.* [No entry.]

Class 7—*Collections of Cut Roses.* [No entry.]

Class 8.—*Collections of Sweet Peas.* [2 entries.]

9 I. (£7.)—**E. W. King & Co.**, Coggeshall, Essex.
10 II. (£5.)—**S. Bide & Sons**, Farnham, Surrey.

Class 9.—*Best Collection of Vegetables.* [No entry.]

Exhibits not for Competition.

Large Gold Medals to:—

Alex. Dickson & Sons, Ltd., Hawlmark, Belfast, for Collection of Roses.
Sutton & Sons, Reading, for Collection of Vegetables.

Gold Medals to:—

Alex. Dickson & Sons, Ltd., for Collection of Sweet Peas.
Allwood Brothers, Wivelsfield, Haywards Heath, for Collection of Carnations.
Hogg & Robertson, 22 Mary Street, Dublin, for Collection of Iris, Ixias and Anemones.
Toogood & Sons, Southampton, for Collection of Vegetables.

Silver-Gilt Medals to:—

Broadhead & Son, Thongsbridge, Huddersfield, for Rockery Display.
Godfrey & Son, Exmouth, Devon, for Collection of Pelargoniums, &c.
Stuart Low & Co., Bush Hill Park, Enfield, for Collection of Orchids.
Stephen Treseder & Son, Cowbridge Road, Cardiff, for Collection of Plants and Floral Designs.

Silver Medals to:—

Rich & Co., 2 Walcot Street, Bath, for Collection of Delphiniums and Cut Flowers.
Jarman & Co., Chard, Somersetshire, for Collection of Roses and Cut Flowers.
John Crossling, Penarth, South Wales, for Collection of Roses and Carnations.

FORESTRY EXHIBITION.

Class 1.—*Specimens of Oak, Elm, Ash, and Beech Timber.* [2 entries.]

1 (Silver Medal.)—THE EARL OF LISBURNE, Crosswood, Cardiganshire.

Class 2.—*Specimens of Larch, Spruce, and Scotch Pine Timber.* [4 entries.]

5 (Silver Medal.)—MARGAM ESTATE, Port Talbot, Glamorganshire.
4 (Bronze Medal.)—CAPTAIN J. D. D. EVANS, Ffrwdgrech, Brecon.

Class 3.—*Specimens of any other sort of Hard Wood or Broad-leaved Timber* [1 entry.]

7 (Silver Medal.)—CHARLES COLTMAN ROGERS, Stanage Park, Brampton Bryan, Herefordshire, for Aspen, Sycamore, Hornbeam, Cherry, Horse Chestnut, Holly, Apple, Spanish Chestnut, Maple, Birch, Acacia, Hawthorn, Alder, Pear, Lime, Portugal Laurel, Walnut.

Class 4.—*Specimens of any other sort of Coniferous Timber.* [3 entries.]

8 & 9 Bronze Medal.—THE EARL OF LISBURNE, Crosswood, Cardiganshire.

Class 5.—*Collection of Planks of Home-grown Woods.* [1 entry.]

C.—11.

Class 6.—*Specimens of Panels or Boards of various species; also home-made specimens of Furniture and other articles grown and manufactured on Exhibitor's Estate.* [3 entries.]

13A Bronze Medal.—CHARLES COLTMAN ROGERS, Stanage Park, Brampton Bryan, Herefordshire.

Class 7.—*Oak Field Gates for Farm use, to be hung and shown in working order with fastenings.* [5 entries.]

18 Silver Medal.—COLONEL MARLING, V.C., C.B., Sedbury Park, near Chepstow.
17 Bronze Medal.—MARGAM ESTATE, Port Talbot, Glamorganshire.

Class 8.—*Field Gates for Farm use, of any other Home-grown Wood or Combination of Home-grown Woods.* [7 entries.]

21 Silver Medal.—CAPTAIN H. A. CHRISTY, Llangoed, Llyswen, Breconshire.
20 Bronze Medal.—LORD GLANUSK, C.B., D.S.O., Glanusk Park, Crickhowell, Breconshire.

Class 9.—*Wicket or Hunting Gates.* [1 entry.]
[No Award.]

Class 10.—*Tree Guards.* [2 entries.]

H. C.—27, 28.

Class 11.—*Fencing, of Home-grown Wood and made in Great Britain.* [No entry.]

Class 12.—*Fencing of Foreign Timber.* [7 entries.] [No award.]

Class 13.—*Specimens showing comparative quality of any Timber grown on different soils and situations, and the respective ages at which it reaches marketable size and maturity.* [No entry.]

Class 14.—*Specimens of Stems, and Boards cut from them, illustrating the effects of dense and thin crops in branch suppression and quality of timber.* [No entry.]

Class 15.—*Nurserymen's Competition for the best exhibit of rarer Specimen and Ornamental Trees.* [No entry.]

Classes 16 to 23.—*Articles for exhibition only.*

Bronze Medal.—FORESTER'S SCHOOL, Forest of Dean, Park End, Lydney, Glos.
Bronze Medal.—SCHOOL OF FORESTRY, University of Cambridge.

Gold Medal given for the best collection of exhibits in Classes 1-23 to CHARLES COLTMAN ROGERS, Stanage Park, Brampton Bryan, Herefordshire.

PLANTATIONS COMPETITIONS.

Restricted to Glamorganshire, Breconshire, Cardiganshire, Carmarthenshire, and Pembrokeshire.

Plantations must not be of less than ten years' growth.

STAGE A.—Plantations which have been weeded or lightly thinned, including the removal of dead or dying trees.

STAGE B.—From the end of STAGE A up to the completion of the second thinnings.

HARDWOODS as final crop. To be not less than 4 acres in extent.

Class 1, Stage A.
(No entry).

Class 2, Stage B.
(No entry).

CONIFERS. To be not less than 4 acres in extent.

Class 3, Stage A. [6 entries.]

Silver Medal.—BIRMINGHAM CORPORATION, Elan Estate, Rhayader.
Bronze Medal.—CAPTAIN H. A. CHRISTY, Llangoed, Boughrood, Breconshire.

Class 4, Stage B. [4 entries.]

Silver Medal.—THOMAS JAMES WADDINGHAM, Hafod, Devil's Bridge.
Bronze Medal.—LORD GLANUSK, C.B., D.S.O., Glanusk Park, Crickhowell, Breconshire.

Class 5.—*Best example showing systematic management of existing Woodland area including the renovation and conversion of an unprofitable wood into a profitable condition.* [4 entries.]

Silver Medal.—MARGAM ESTATE, Port Talbot, Glamorganshire.
Bronze Medal.—THE EARL OF LISBURNE, Crosswood, Cardiganshire.

Class 6.—*Plantations of not less than 2 acres consisting of Douglas Fir, Sitka Spruce, Japanese Larch, Corsican Pine, or any other rarer conifer, pure or mixed, of not less than five or more than thirty years' growth.* [7 entries.]

Silver Medal.—MAJOR J. M. GIBSON WATT, Doldowlod, Rhayader.
Bronze Medal.—THE EARL OF PLYMOUTH, St. Fagan's, Cardiff.

Class 7.—*Best managed woodland estates, not less than* 1,000 *acres in area.* [4 entries.]

Special Medal.—LORD GLANUSK, C.B., D.S.O., Glanusk Park, Crickhowell, Breconshire.
Silver Medal.—MAJOR J. M. GIBSON WATT, Doldowlod, Rhayader.
Bronze Medal.—MARGAM ESTATE, Port Talbot, Glamorganshire.

Gold Medal, value £20, given by the Monmouthshire and South Wales Coal Owners' Association for the estate in the Five Counties (Glamorgan, Brecon, Pembroke, Carmarthen and Cardigan), which has made—in the opinion of the judges—the best contribution of Pitwood to the War in proportion to the area of woods, locality, and other guiding factors, to the EARL OF LISBURNE, Crosswood, Cardiganshire.

Gold Medal, given by the Royal English Arboricultural Society for the best plantation to T. J. WADDINGHAM, Hafod, Devil's Bridge, Cardiganshire.

TIMBERING COMPETITIONS.[1]

Class 1.—*Timbering Competition, open to Colliers only.* [27 entries.]

11 I. (£5.)—JOHN JAMES MARSHALL, Ty-Melyn, Penybank, Ammanford, Carm. Partner—W. E. Thomas.
4 II. (£3.)—GREGSON EVANS, 37 Albion Terrace, Cilfynydd, Glam. Partner—Sidney Evans.
10 III. (£2.)—RICHARD LLOYD, Blaengwastad, Trimsaran Road, Llanelly. Partner—John Sadler.
25 R. N.—JOHN WILLIAMS, 1 Eclipse Terrace, Five Roads, Llanelly. Partner—Thomas Emanuel.
C.—14, 26.

Class 2.—*Timbering Competition, open to Timbermen and Colliers.* [36 entries.]

56 I. £5.)—THOMAS ROWLANDS, Oak Villa, Carway, Kidwelly (Collier). Partner—Johnny Rowlands.
59 II. (£3.)—THOMAS WALTERS, 108 Van Road, Caerphilly (Collier). Partner—William Walters.
42 III. (£2.)—DANIEL JONES, Bryn Seion House, Ystalyfera, Swansea (Timberman). Partner—W. Jones.
28 R. N.—THOMAS BLACKWELL, 31 Broneynon Terrace, Cwmdare, Aberdare (Timberman). Partner—John Davies.
H. C.—39, 61.

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[1] Prizes given by the Cardiff Local Committee.

IMPLEMENTS.

Miscellaneous Implements.

Silver Medals for articles entered as "New Implements for Agricultural or Estate Purposes."

466 **The Agra Engineering Co.**, Eggesford, Devon, for "The Agra" Manure (Artificial) Distributor. Self cleaning.

468 **Gloucester Incubator Co.**, Woodchester Mills, Stroud, for Gate Fastener.

645 **J. W. Proctor & Co., Ltd.**, Cestro Works, Chesterfield, for Depth-Controlling device and transport arrangement on Disc Harrow.

1308 **G. Llewellin & Son**, Haverfordwest, for Combination Valve Eyelet and Water Sprayer, with adjustable Single Lever Lid Fastener.

1894 **W. N. Nicholson & Sons**, Trent Iron Works, Newark-on-Trent, for Combined Cultivator for Rigid or Spring Tines.

2191 **Ransomes, Sims & Jefferies, Ltd.**, Orwell Works, Ipswich, for Tractor Plough with Self Lift and Adjustments for varying widths and depths.

2318 **Blackstone & Co., Ltd.**, Stamford, for Improved Gear on Combined Swath Turner and Side Rake.

3170 **Bamfords, Ltd.**, Leighton Iron Works, Uttoxeter, for Hayloader, New Patent, with three throw cranks.

3294 **J. & H. McLaren, Ltd.**, Midland Engine Works, Leeds, for Patent compensating arrangement on Anti-balance Steam Plough.

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In addition to the two Farm Account Books, Nos. 1 (Diary) and 2 (Receipts and Payments), the Council, with the view of assisting the Farmer who may elect to be assessed for the payment of Income Tax under Schedule D., *i.e.*, on his profits, have decided to issue the following additional Account Books :—

No. 3. FARM CASH BOOK, for Receipts and Payments, to be used with a Ledger. Price **10/6.**

No. 4. FARM LEDGER, giving specimen entries, and particulars of Profit and Loss Account, and Balance Sheet. Price **8/6.**

Correctly kept, these Books will enable the Farmer to produce a correct account of the Profit or Loss on his Farm for any one year, which will be necessary if he decides to pay Income Tax under Schedule D.

Copies of Books Nos. 1 (Diary, price 7/6) and 2 (Receipts and Payments, price 8/6), are published for the Society by Messrs. FORSTER GROOM & Co., LTD., 15 Charing Cross, London, S.W.1.

The Account Books, Nos. 3 (Cash Book, price 10/6) and 4 (Ledger, price 8/6) are to be obtained from the Society's House, 16 Bedford Square, London, W.C. 1.

Royal Agricultural Society of England.

STATEMENT
OF
PRIVILEGES OF MEMBERSHIP.

CHEMICAL.—Advice to Buyers of Fertilisers and Feeding Stuffs; Analyses; Sample of Order Form, &c. (pages ii.—vi.).

BOTANICAL.—Information on purchase and value of Seeds and other matters; Suggestions and Samples of Order Form (pages vii.—ix.).

ZOOLOGICAL.—Information on Pests of Farm Crops, Fruit and Forest Trees, and Domesticated Animals, &c. (page x.).

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January, 1920.

THOMAS McROW,
Secretary.

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(Applicable only to the case of persons who are not commercially engaged in the manufacture or sale of any substance sent for Analysis.)

THE COUNCIL HAVE FIXED THE FOLLOWING

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These privileges are applicable only when the Analyses are for *bonâ fide* agricultural purposes, and are required by Members of the Society for their own use and guidance in respect of farms or land in their own occupation and within the United Kingdom.

The Analyses are given on the understanding that they are required for the individual and sole benefit of the Member applying for them, and must not be used for other persons, or for commercial purposes.

The Analyses and reports may not be communicated to either vendor or manufacturer, except in cases of dispute.

Land or estate agents, bailiffs, and others, when forwarding samples, are required to state the names of those Members on whose behalf they apply.

	£	*s.*	*d.*
1.—An opinion on the purity of any Fertiliser or Feeding Stuff (so far as this can be given without detailed analysis)		1	0
2.—Determination of any *one* ordinary constituent in a Fertiliser or Feeding Stuff		2	6
3.—Determination of Potash		5	0
4.—Commercial Analysis of any ordinary Fertiliser or Feeding Stuff		5	0
5.—Full Analysis of any compound Fertiliser or Feeding Stuff		10	0
6.—Analysis of any other material in ordinary use for agricultural purposes		10	0
7.—Analysis of Milk, Cream, Butter, or other Dairy produce from Members' own farms		2	6
(N.B.—Samples in any way connected with the Sale of Food and Drugs Acts are not undertaken for analysis.)			
8.—Analysis of Water	1	10	0
9.—Analysis of Soil—determination of Lime only		10	0
10.—Analysis of Soil—partial	1	0	0
11.—Analysis of Soil—complete	3	0	0
12.—Consultation by letter or personal appointment		5	0

OPINION OF VALUE.

With the analysis will be given, as far as possible, an opinion as to whether an article analysed is worth the price asked for it, or not, provided the cost of the same, together with guarantee (if any) and other particulars relating to the purchase, be given at the time.

ALL SAMPLES AND COMMUNICATIONS, TOGETHER WITH FEES FOR ANALYSIS, TO BE ADDRESSED TO—

DR. VOELCKER, Analytical Laboratory,
1, Tudor Street, London, E.C.4.

Instructions for Selecting and Sending Samples for Analysis.

GENERAL RULES.—(1.) A sample taken for analysis should be fairly *representative of the bulk* from which it has been drawn.—(2.) The sample should reach the Analyst *in the same condition* that it was in at the time when drawn.

When **Fertilisers** are delivered in bags, select four or five of these from the bulk, and either turn them out on a floor and rapidly mix their contents, or else drive a shovel into each bag and draw out from as near the centre as possible a couple of shovelfuls of the manure, and mix these quickly on a floor.

Halve the heap obtained in either of these ways, take one half (rejecting the other) and mix again rapidly, flattening down with the shovel any lumps that appear. Repeat this operation until at last only some three or four pounds are left.

From this fill three tins, holding from ½lb. to 1lb. each, mark, fasten up and seal each of these. Send one for analysis, and retain the others for reference.

Or,—the manure may be put into glass bottles provided with well-fitting corks; the bottles should be labelled and the corks sealed down. The sample sent for analysis can be packed in a wooden box and sent by post or rail.

When manures are delivered in bulk, portions should be successively drawn from *different parts* of the bulk, the heap being turned over now and again. The portions drawn should be thoroughly mixed, subdivided, and, finally, samples should be taken as before, except that when the manure is coarse and bulky it is advisable to send larger samples than when it is in a finely divided condition.

Linseed, Cotton, and other Feeding Cakes.—If a single cake be taken, three strips should be broken off right across the cake, and from the middle portion of it, one piece to be sent for analysis, and the other two retained for reference. Each of the three pieces should be marked, wrapped in paper, fastened up, and sealed. The piece forwarded for analysis can be sent by post or rail.

A more satisfactory plan is to select four to six cakes from different parts of the delivery, then break off a piece about four inches wide from the middle of each cake, and pass these pieces through a cake-breaker. The broken cake should then be well mixed and three samples of about 1 lb. each should be taken and kept in tins or bags, duly marked, fastened, and sealed as before. One of these lots should be sent for analysis, the remaining two being kept for reference. It is advisable also with the broken pieces to send a small strip from an unbroken cake.

Feeding Meals, Grain, &c.—Handfuls should be drawn from the centre of half a dozen different bags of the delivery; these lots should then be well mixed, and three ½-lb. tins or bags filled from the heap, each being marked, fastened up, and sealed. One sample is to be forwarded for analysis and the others retained for reference.

Soils.—Have a wooden box made 6 inches in length and width, and from 9 to 12 inches deep, according to the depth of soil and subsoil of the field. Mark out in the field a space of about 12 inches square; dig round in a slanting direction a trench, so as to leave undisturbed a block of soil and its subsoil 9 to 12 inches deep; trim this block to make it to fit into the wooden box, invert the open box over it, press down firmly, then pass a spade under the box and lift it up, gently turn over the box, nail on the lid, and send by rail. The soil will then be received in the position in which it is found in the field.

In the case of very light, sandy, and porous soils, the wooden box may be at once inverted over the soil, forced down by pressure, and then dug out.

Waters.—Samples of water are best sent in glass-stoppered Winchester bottles, holding half a gallon. One such bottle is sufficient for a single sample. Care should be taken to have these scrupulously clean. In taking a sample of water for analysis it is advisable to reject the first portion drawn or pumped, so as to obtain a sample of the water when in ordinary flow. The bottle should be rinsed out with the water that is to be analysed, and it should be filled nearly to the top. The stopper should be secured with string, or be tied over with linen or soft leather. The sample can then be sent carefully packed either in a wooden box with sawdust, &c., or in a hamper with straw.

Milk.—A pint bottle should be sent in a wooden box.

GENERAL INSTRUCTIONS. **Time for Taking Samples.**—All samples, both of fertilisers and feeding stuffs, should be taken as soon after their delivery as possible, and should reach the Analyst within *ten days* after delivery of the article. In every case it is advisable that the Analyst's certificate be received before a fertiliser is sown or a feeding stuff is given to stock.

Procedure in the Event of the Vendor wishing Fresh Samples to be Drawn.—Should a purchaser find that the Analyst's certificate shows a fertiliser or feeding stuff not to come up to the guarantee given him, he may inform the vendor of the result and complain accordingly. He should then send to the vendor *one* of the two samples which he has kept for reference. If, however, the vendor should demand that a fresh sample be drawn, the purchaser must allow this, and also give the vendor an opportunity of being present, either in person or through a representative whom he may appoint. In that case three samples should be taken in the presence of both parties with the same precautions as before described, *each* of which should be duly packed up, labelled and *sealed* by both parties. One of these is to be given to the vendor, one is to be sent to the Analyst, and the third is to be kept by the purchaser for reference or future analysis if necessary.

Suggestions to Purchasers of Fertilisers and Feeding Stuffs.

Purchasers are recommended in all cases to insist on having an **INVOICE**, and to see that such invoice contains the following particulars:—

In the case of **Fertilisers**:—

(1) The *name* of the Fertiliser.
(2) Whether the Fertiliser is artificially *compounded* or not.
(3) The *minimum* analysis of the Fertiliser in respect of its principal fertilising ingredients.

In the case of artificially prepared **Feeding Stuffs** for Cattle:—

(1) The *name* of the article.
(2) The *description* of the article—whether it has been prepared (*a*) from one substance or seed, or (*b*) from more than one substance or seed.
(3) The percentages of oil and albuminoids guaranteed.

For example:

(*a*) An invoice describing an article as "Linseed Cake" implies a warranty that the article is pure, *i.e.*, is prepared from linseed only; "Cotton Cake" (whether decorticated or undecorticated), and "Rape Cake" (for feeding purposes), would come under a similar category.

Purchasers are reminded that the use of such terms as "95 *per cent.*," "*Oil Cake*," *&c., affords no security against adulteration. The adoption of the* ORDER FORM *issued by the Society is therefore strongly recommended.*

(*b*) In the case of a Compound Cake or Feeding Stuff, a Vendor is compelled by the Fertilisers and Feeding Stuffs Act of 1906 to state the percentages of oil and albuminoids guaranteed, and that it is prepared from more than one substance, but he is not required to specify the particular materials used in its preparation. Purchasers are recommended, therefore, to buy Mixed Feeding Cakes, Meals, &c., with a guaranteed analysis. Any statements in the invoice as to the component parts of such Mixed Cake or Meal will take effect as a warranty, as also will any statements in an invoice, circular, or advertisement as to the percentages of nutritive and other ingredients in any article sold for use as food for cattle.

Members of the Society are strongly recommended not only to see that the invoices given to them accurately describe the goods they have ordered, but to make all their orders *subject to the Analysis and Report of the Consulting Chemist of the Royal Agricultural Society of England.* Copies of a Form of Order (see page v.) for this purpose may be obtained on application to the Secretary.

Attention is particularly directed to the recommendations below as to the qualities of Fertilisers and Feeding Stuffs which purchasers should demand.

Conditions of Purchase and Sale.

FERTILISERS.

Raw Bones, Bone-meal, or Bone-dust to be guaranteed "PURE," and to contain not less than 45 per cent. of Phosphate of Lime, and not less than 4 per cent. of Ammonia.

Steamed or "Degelatinized" Bones to be guaranteed "PURE," and to contain not less than 55 per cent. of Phosphate of Lime, and not less than 1 per cent. of Ammonia.

Mineral Superphosphate of Lime to be guaranteed to contain a certain percentage of "Soluble Phosphate." [From 25 to 28 per cent. of Soluble Phosphate is an ordinarily good quality.]

Dissolved Bones to be guaranteed to be "made from raw bone and acid only," and to be sold as containing stated minimum percentages of Soluble Phosphate, Insoluble Phosphates, and Ammonia.

Compound Artificial Manures, Bone Manures, Bone Compounds, &c., to be sold by analysis stating the minimum percentages of Soluble Phosphate, Insoluble Phosphates, and Ammonia contained.

Basic Slag to be guaranteed to contain a certain percentage of Total phosphates or of "Citric soluble" phosphates (*i.e.*, phosphates soluble in a 2 per cent. citric acid solution), and to be sufficiently finely ground that at least 80 per cent. will pass through a "standard" sieve (10,000 meshes to the square inch).

The highest grades of Basic Slag range from 38 to 42 per cent., medium grades from 30 to 35 per cent., and low grades from 21 to 26 per cent. of Total phosphates.

Generally speaking, at least 80 per cent. of the Total phosphates in a Basic Slag are soluble in the citric acid solution above mentioned. Accordingly, a high grade Basic Slag would contain from 30 to 34 per cent., a medium grade from 24 to 28 per cent., and a low grade from 17 to 21 per cent. of "citric soluble" phosphates.

Peruvian Guano to be described by that name, and to be sold by analysis stating the minimum percentages of Phosphates and Ammonia.

Sulphate of Ammonia to be guaranteed "PURE," and to contain not less than 24 per cent. of Ammonia.

Nitrate of Soda to be guaranteed "PURE," and to contain 95 per cent. of Nitrate of Soda.

Kainit to be guaranteed to contain 23 per cent. of Sulphate of Potash.

All Fertilisers to be delivered in good and suitable condition for sowing.

FEEDING STUFFS.

Linseed Cake, Cotton Cake (Decorticated and Undecorticated), and **Rape Cake** (for feeding purposes) to be pure, *i.e.*, prepared *only* from the one kind of seed from which their name is derived; and to be in sound condition. The percentages of oil and albuminoids guaranteed must also be stated. The Report of the Consulting Chemist of the Royal Agricultural Society of England to be conclusive as to the "purity" or otherwise of any feeding stuffs.

Mixed Feeding Cakes, Meals, &c., to be sold on a guaranteed analysis, giving the percentages of oil and albuminoids, to be sound in condition, and to contain nothing of an injurious nature, or ingredients that are worthless for feeding purposes.

ORDER FORM (SAMPLE)

FOR FERTILISERS OR FEEDING STUFFS.

Address ________________________

____

To ________________________

Date ________________________

Please supply me for Delivery ________________________

________ ________ *Cwt. of* ________________________

At ________________________ *per ton.*

GUARANTEED to be in accordance with the conditions specified on the back hereof, relating to this article, and subject to the analysis and report of the Consulting Chemist of the Royal Agricultural Society of England.

(*Signature of Member*) ________________________

NOTE.—Copies of this Form will be forwarded to Members on application to the Secretary.

P.T.O.

CONDITIONS OF PURCHASE AND SALE.

FERTILISERS.

Raw Bones, Bone-meal, or **Bone-dust** to be guaranteed "PURE," and to contain not less than 45 per cent. of Phosphate of Lime, and not less than 4 per cent. of Ammonia.

Steamed or **"Degelatinized" Bones** to be guaranteed "PURE," and to contain not less than 55 per cent. of Phosphate of Lime, and not less than 1 per cent. of Ammonia.

Mineral Superphosphate of Lime to be guaranteed to contain a certain percentage of "Soluble Phosphate." [From 25 to 28 per cent. of Soluble Phosphate is an ordinarily good quality.]

Dissolved Bones to be guaranteed to be "made from raw bone and acid only," and to be sold as containing stated minimum percentages of Soluble Phosphate, Insoluble Phosphates, and Ammonia.

Compound Artificial Manures, Bone Manures, Bone Compounds, &c., to be sold by analysis stating the minimum percentages of Soluble Phosphate, Insoluble Phosphates, and Ammonia contained.

Basic Slag to be guaranteed to contain a certain percentage of Total phosphates or of "Citric soluble" phosphates (*i.e.*, phosphates soluble in a 2 per cent. citric acid solution), and to be sufficiently finely ground that at least 80 per cent. will pass through a "standard" sieve (10,000 meshes to the square inch).

The highest grades of Basic Slag range from 38 to 42 per cent., medium grades from 30 to 35 per cent., and low grades from 21 to 26 per cent. of Total phosphates.

Generally speaking, at least 80 per cent. of the Total phosphates in a Basic Slag are soluble in the citric acid solution above mentioned. Accordingly, a high grade Basic Slag would contain from 30 to 34 per cent., a medium grade from 24 to 28 per cent., and a low grade from 17 to 21 per cent. of "citric soluble" phosphates.

Peruvian Guano to be described by that name, and to be sold by analysis stating the minimum percentages of Phosphates and Ammonia.

Sulphate of Ammonia to be guaranteed "PURE," and to contain not less than 24 per cent. of Ammonia.

Nitrate of Soda to be guaranteed "PURE," and to contain 95 per cent. Nitrate of Soda.

Kainit to be guaranteed to contain 23 per cent. of Sulphate of Potash.

All Fertilisers to be delivered in good and suitable condition for sowing.

FEEDING STUFFS.

Linseed cake, Cotton cake (Decorticated and Undecorticated), and **Rape cake** (for feeding purposes) to be pure, *i.e.*, prepared *only* from the one kind of seed from which their name is derived; and to be in sound condition. The percentages of oil and albuminoids guaranteed must also be stated. The Report of the Consulting Chemist of the Royal Agricultural Society of England to be conclusive as to the "purity" or otherwise of any feeding stuffs.

Mixed Feeding-cakes, Meals, &c., to be sold on a guaranteed analysis, giving the percentages of oil and albuminoids, to be in sound condition, and to contain nothing of an injurious nature, or ingredients that are worthless for feeding purposes.

MEMBERS' BOTANICAL PRIVILEGES.

THE COUNCIL HAVE FIXED THE FOLLOWING

RATES OF CHARGES FOR THE EXAMINATION OF PLANTS AND SEEDS

BY THE SOCIETY'S BOTANIST.

Analyses are given on the understanding that they are required for the individual and sole benefit of the member applying for them, and must not be used for other persons or for commercial purposes. The analyses and Reports may not be communicated to the vendor except in cases of dispute.

The charge for examination must be paid at the time of application, and the carriage of all parcels must be prepaid. When, however, *bonâ fide* inquiries require no special investigation the fees will be returned with the reply.

1.—Report on the purity and germinating capacity of samples of agricultural seeds, with a statement as to the nature and amount of the impurities or adulterants present	**1*s.***
2.—Report on the constitution of mixtures of grass seeds and an opinion as to their suitability for temporary leys, permanent pastures, &c.	**1*s.***
3.—Identification of weeds and poisonous plants with suggestions for their eradication	**1*s.***
4.—Report on the fungoid diseases affecting farm crops, with an account of the methods suitable for their treatment, where known	**1*s.***
5.—Report on the natural herbage of a district as a guide to the formation of permanent pastures	**1*s.***
6.—Report on the suitability or otherwise of the different varieties of the chief farm crops for local conditions (where the information is available), stating their average cropping capacity as compared with other varieties, their quality, power of resistance to various diseases, and general purity to type	**1*s.***
7.—Reports on any other matters of a botanical nature of interest to agriculturists	**1*s.***

PURCHASE OF SEEDS.

The purchaser should obtain from the vendor, by invoice or other writing, the proper designation of the seeds he buys, with a guarantee of the percentage of purity and germination, and of its freedom from ergot, and, in the case of clover, from the seeds of dodder.

Copies of the "Order Form and Conditions of Purchase and Sale of Seeds" (see page ix) may be obtained by Members on application to the Secretary, at 16 Bedford Square, London, W.C. 1.

MEMBERS' BOTANICAL PRIVILEGES (*continued*).

THE SAMPLING OF SEEDS.

The utmost care should be taken to secure a fair and honest sample. This should be drawn from the bulk delivered to the purchaser, and not from the sample sent by the vendor.

When legal evidence is required, the sample should be taken from the bulk, and placed in a sealed bag in the presence of a witness. Care should be taken that the sample and bulk be not tampered with after delivery, or mixed or brought in contact with any other sample or bulk.

At least one ounce of grass and other small seeds should be sent, and two ounces of cereals and the larger seeds. When the bulk is obviously impure, the sample should be at least double the amount specified. Grass seeds should be sent at least four weeks, and seeds of clover and cereals two weeks before they are to be used.

The exact name under which the sample has been sold and analysed should accompany it.

REPORTING THE RESULTS.

The Report will be made on a schedule in which the nature and amount of impurities will be stated, and the number of days each sample has been under test, with the percentage of the seeds which have germinated.

"Hard" clover seeds, though not germinating within the time stated, will be considered good seeds, and their percentage separately stated.

The impurities in the sample, including the chaff of the species tested, will be specified in the schedule, and only the percentage of the pure seed of that species will be reported upon; but the REAL VALUE of the sample will be stated. The Real Value is the combined percentages of purity and germination, and is obtained by multiplying these percentages and dividing by 100; thus in a sample of Meadow Fescue having 88 per cent. purity and 95 per cent. germination, 88 multiplied by 95 gives 8,360, and this divided by 100 gives 83·6, the Real Value.

SELECTING SPECIMENS OF PLANTS.

When a specimen is sent for determination, the whole plant should be taken up and the earth shaken from the roots. If possible, the plants must be in flower or fruit. They should be packed in a light box, or in a firm paper parcel.

Specimens of diseased plants or of parasites should be forwarded as fresh as possible. They should be placed in a bottle, or packed in tinfoil or oil-silk.

All specimens should be accompanied with a letter specifying the nature of the information required, and stating any local circumstances (soil, situation, &c.) which, in the opinion of the sender, would be likely to throw light on the inquiry.

PARCELS OR LETTERS CONTAINING SEEDS OR PLANTS FOR EXAMINATION MUST BE ADDRESSED (CARRIAGE OR POSTAGE PREPAID) TO—

PROFESSOR R. H. BIFFEN, F.R.S.,
School of Agriculture, Cambridge.

ORDER FORM (Sample)

AND

CONDITIONS OF PURCHASE AND SALE OF SEEDS.

From	**To**
....	....
....	....

Please Supply me for Delivery the Seeds specified in the Order Form on the back hereof, it being guaranteed that each kind of seed is practically free from impurities: that the Grass seeds are free from Ergot, and the Clovers free from Dodder: that the germination is not less than is specified on the back hereof: and further that the purchase is subject to the examination and germination tests of the Botanist of the Royal Agricultural Society of England, whose opinion shall be final.

(Signature of Member)..

Date..

Note.—Copies of this Form will be forwarded to Members on application to the Secretary. P.T.O.

MEMBERS' ZOOLOGICAL PRIVILEGES.

The Council have fixed the charge of 1s. for information to be supplied, by the Society's Zoologist, respecting any injurious (animal, quadruped, bird, insect, worm, &c.) pests.

(1) FARM CROPS.

All the ordinary farm crops are subject to numerous pests, some attacking the roots, some the leaves, others the stem or the blossom. The first necessity is the accurate identification of the pest in any case, for a knowledge of its life-history often suggests a method of dealing with it.

(2) FRUIT TREES.

There are a great number of orchard and bush-fruit pests. Some (codlin moth, pear-midge, &c.) attack the fruit; others (red-spider, aphis, caterpillars, &c.) the leaves; others (woolly aphis, boring beetles, &c.) the stem. Information will be given as to the identity of any pest and the best way of combating it.

(3) FOREST TREES.

Advice will be given with regard to the treatment of forest-tree pests, in plantations, nursery gardens, or ornamental grounds. Such pests may attack the trunks (beech-scale, boring insects, &c.), the leaves (caterpillars, aphis, &c.), or the roots (cockchafer grubs, &c., in young plantations).

(4) DOMESTICATED ANIMALS.

Animal parasites, whether external or internal, may be sent for identification and advice. They include worms, fly-maggots, ticks, lice, &c., and many well-known diseases (warbles, gapes, &c.) are due to them.

Diseases of animals due to other causes should be referred to the Veterinary Department.

N.B.—It is very important that specimens should reach the Zoologist fresh and in good condition. It is often impossible to determine the cause of injury in the case of crushed and shrivelled material. Tin boxes should be used, and some damp blotting-paper inserted to prevent undue drying. In the case of root-pests, the root should be sent with its surrounding soil.

PARCELS OR LETTERS CONTAINING SPECIMENS (CARRIAGE OR POSTAGE PAID) MUST BE ADDRESSED TO—

Mr. CECIL WARBURTON, M.A.,
School of Agriculture, Cambridge.

MEMBERS' VETERINARY PRIVILEGES.

In order to enable Members to obtain the highest possible Veterinary advice when the necessity arises, the Society has entered into an agreement with the Royal Veterinary College, under which diseased animals may be admitted to the College Infirmary for treatment, and the Professors of the College may be consulted or called upon to investigate outbreaks of disease at greatly reduced fees.

I.—ADMISSION OF SICK OR DISEASED ANIMALS TO THE ROYAL VETERINARY COLLEGE.

Members of the Society have all the privileges of subscribers to the Royal Veterinary College, Camden Town, N.W.1., so far as the admission for treatment of Cattle, Sheep, and Swine is concerned, without being called upon to pay the annual subscription to the College of two guineas. The charges made by the College for keep and treatment are as follows:—Cattle, 10*s.* 6*d.*, and Sheep and Pigs, 3*s.* 6*d.* per week for each animal.

The full privileges of subscribers, including the examination of horses, and the admission of horses and dogs into the College Infirmary for surgical or medical treatment, on payment of the cost of keep, will be accorded to Members of the Society on payment of a subscription to the College of one guinea instead of two guineas per annum.

II.—FEES FOR CONSULTATIONS, ANALYSES, AND EXAMINATIONS AT THE ROYAL VETERINARY COLLEGE.

The following fees are payable by Members of the Society for services performed at the Royal Veterinary College on their behalf in cases where a visit to the locality is not involved:—

	£	*s.*	*d.*
Personal consultation with a Veterinary Professor . . .		10	6
Consultation by letter		10	6
Post-mortem examination of an animal and report thereon .	1	1	0
Chemical Examination of viscera for any specified metallic poison		10	6
Chemical Examination of viscera for metallic poisons . .	1	0	0
Chemical Examination of viscera for vegetable poisons . .	1	0	0
Chemical Examination of viscera complete, for metals and alkaloids	2	0	0

(The above fees do not apply to cases which involve a visit to the locality.)

III.—INVESTIGATION OF OUTBREAKS OF DISEASE AMONG FARM STOCK.

In the event of any obscure outbreak of disease among Cattle, Sheep, or Swine occurring on the farm of any Member of the Society, application should at once be made to the Principal of the Royal Veterinary College, Camden Town, London, N.W.1.

The Principal will then instruct an officer of the College to inquire into the outbreak and report to him. He will also fix the amount of remuneration to be paid to the Inspector, whose professional fee will in no case exceed two guineas per day, exclusive of the actual cost of travelling and maintenance.

When it appears, on the report of the Inspector selected, that the outbreak was of an important character or of general interest, the cost of the investigation will be defrayed by the Royal Veterinary College.

LIBRARY.

The Society's Library has recently been re-arranged and a printed Catalogue prepared of the Agricultural and other works which it contains. This Catalogue can be purchased by Members at the Society's House, price 17/6 per copy.

A Librarian has been appointed, and the following regulations have been made by the Council:—

1. The Library is open every week day from 10 till 4, except on Saturdays, and on those days when the Council and Committees are meeting.

2. Governors and Members are entitled to take out books, upon paying the carriage of the same and all expenses from the time of issue to the time of return. Books of reference and selected books will not be issued.

3. One month is allowed for the perusal of books.

4. Governors and Members shall be liable to pay the full price of any books borrowed by them which may be lost or damaged during the interval between their issue and return.

PUBLICATIONS OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

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TEXT-BOOK ON AGRICULTURE.

ELEMENTS OF AGRICULTURE: a Text-book prepared under the authority of the Royal Agricultural Society of England by the late W. FREAM, LL.D. Tenth (Revised and Enlarged) Edition (51st Thousand), edited by J. R. AINSWORTH-DAVIS, M.A. 700 pp. with 333 Illustrations. 1918. Price 7*s.* 6*d.* nett, bound in cloth.

FARM ACCOUNT BOOKS.

No. 1, A DIARY, combining Cash Account with daily record of Farm Transactions. Price 7*s.* 6*d.*

No. 2, A FARM ACCOUNT BOOK, 2nd Edition, showing payments and receipts, and supplying a form of Annual Balance Sheet. Price 8*s.* 6*d.* Published for the Society and sold by Messrs. FORSTER, GROOM & CO., Ltd., 15 Charing Cross, London, S.W.1.

No. 3, FARM CASH BOOK, receipts and payments, to be used with a Ledger. Price 10*s.* 6*d.*

No. 4, FARM LEDGER, giving specimen entries and particulars of profit and loss account and balance sheet. Price 8*s.* 6*d.*

Nos. 3 and 4 are to be obtained at the Society's House, 16 Bedford Square, London, W.C. 1.

PAMPHLETS.

VETERINARY PAMPHLETS BY PROFESSOR SIR GEORGE BROWN, C.B.:

DENTITION AS INDICATIVE OF THE AGE OF FARM ANIMALS. Sixth Edition (1913). 64 pp. With 60 Illustrations. Price 1*s.*

ANIMALS OF THE FARM IN HEALTH AND DISEASE. 72 pp. With 52 Illustrations. Fourth Edition (1909). Price 1*s.*

THE STRUCTURE OF THE HORSE'S FOOT AND THE PRINCIPLES OF SHOEING. 23 pp. Fourth and Enlarged Edition (1902). With 12 Illustrations. Price 6*d.*

CONTAGIOUS FOOT ROT OF SHEEP. Second and Enlarged Edition (1905). 24 pp. With 8 Illustrations. Price 1*s.*

OTHER VETERINARY PAMPHLETS:

THE MARE AND FOAL. By Professor J. WORTLEY AXE, M.R.C.V.S. 58 pp. With 20 Illustrations. Second Edition (1909). Price 1*s.*

THE LAMBING PEN. By HAROLD LEENEY. 3rd Ed. (1914). 40 pp. With 9 Illustrations. Price 6*d.*

TUBERCULOSIS AS REGARDS HEREDITY IN CAUSATION AND ELIMINATION FROM INFECTED HERDS. By PROFESSOR SIR JOHN MCFADYEAN, M.B., B.Sc., C.M. (1911). 19 pp. Price 1*s.*

CALF REARING: An Experiment conducted at the Woburn Experimental Farm, 1912-14. By J. AUGUSTUS VOELCKER, M.A., B.Sc., Ph.D., 1915. 12 pp. Price 6*d.*, 3*d.* to Members.

PAMPHLETS BY MR. CHARLES WHITEHEAD, F.L.S., F.G.S.:

PRACTICAL HINTS ON FRUIT FARMING. (1904). With 10 Illustrations. 43 pp. Price 1*s.*

HOP CULTIVATION. With 13 Illustrations (1893). 46 pp. Price 1*s.*

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PRACTICAL HINTS ON VEGETABLE FARMING. By JAMES UDALE (1904). With 15 Illustrations. 41 pp. Price 1*s.*

THE WOBURN EXPERIMENTAL STATION OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND. By J. AUGUSTUS VOELCKER, M.A., B.Sc., Ph.D. Annual Reports on Field, Feeding, and Pot-culture Experiments (1899–1917). Price 1*s.* each.

REPORT ON THE WOBURN POT-CULTURE STATION. By J. AUGUSTUS VOELCKER, M.A., B.Sc., Ph.D. With 17 Illustrations (1900). 52 pp. Price 2*s.* 6*d.*

THE MAKING OF THE LAND IN ENGLAND. By ALBERT PELL. (1899). 27 pp. Price 6*d.*

THE MANAGEMENT AND PLANTING OF BRITISH WOODLANDS. By Professor CHARLES E. CURTIS, F.S.I. (1904). With 6 Illustrations. 36 pp. Price 1*s.*

THE CONVERSION OF HOME-GROWN TIMBER. By ROBERT ANDERSON, F.S.I. (1904). With 4 Illustrations. 28 pp. Price 1*s.*

INSECTS INJURIOUS TO FOREST TREES. By CECIL WARBURTON, M.A., F.Z.S. (1904). With 7 Illustrations. 16 pp. Price 1*s.*

ORCHARD AND BUSH-FRUIT PESTS AND HOW TO COMBAT THEM. By CECIL WARBURTON, M.A., F.Z.S. With 12 Illustrations. Second Edition (1910). 20 pp. Price 6*d.*

SOME PROBLEMS OF RE-AFFORESTATION. By W. SOMERVILLE, M.A., D.Sc. (1919). 13 pp. Price 6*d.*

THE DRYING OF FRUIT AND VEGETABLES. By J. AUGUSTUS VOELCKER, M.A., B.Sc., Ph.D. With 4 Illustrations (1897). 23 pp. Price 3*d.*

COTTAGE SANITATION IN RURAL DISTRICTS. By H. MACLEAN WILSON, M.D., B.Sc. With a Preface by T. PRIDGIN TEALE, F.R.S. Second and Enlarged Edition. 32 pp. 12 Illustrations (1896). Price 3*d.* per copy; 2*s.* per doz.; 12*s.* 6*d.* per 100.

The above can be obtained at the Society's House, 16 *Bedford Square, London, W.C.1., through any bookseller, or of Mr. JOHN MURRAY,* 50*a Albemarle Street, W.*1.

Copies of pamphlets sold at not less than One Shilling each are obtainable by Members of the Society at half-price on direct application to the Secretary.

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Royal Agricultural Society of England.

FORM OF APPLICATION FOR MEMBERSHIP.

I ……………………………………………………………………………………

of ……………………………………………………………………………………

……………………………………………………………………………………

……………………………………………………………………………………

County in which Residence is Situated ……………………………………………………

am desirous of becoming a { *Member* / *Governor* } *of the* **Royal Agricultural Society of England,** *and engage, when elected, to pay the Annual Subscription of £*† ……………………………………………… *and to conform to the Rules and Regulations of the Society until the termination of the year in which I shall withdraw from it by notice, in writing, to the Secretary.*

(*Signature*) ……………………………………………………

Date ……………………………………

Nominated by ……………………………………………………

Elected at the Council Meeting held on ……………………………………

…………………………………………………… *Secretary*

---

† The Council trust that all Members who are disposed to give a larger annual Subscription than the minimum of £1 prescribed by the By-laws will be kind enough to do so, in order that the Society's operations may be maintained.

Royal Agricultural Society of England.

PRIVILEGES OF GOVERNORS AND MEMBERS.

FREE ADMISSION TO SHOWYARD.

The Society holds every year an Exhibition of Live Stock, Farm Produce, and Implements, to which and to the unreserved portions of the Grand Stands at the Horse Ring, Dairy, and elsewhere, Members are entitled to free admission.

REDUCED RATES FOR ENTRIES AT THE ANNUAL SHOW.

Entries of Horses, Cattle, Sheep, Pigs, Poultry, Produce, &c., can be made by Members at reduced rates. For Implement exhibits the entry fee of £1 payable in addition to the charges for space is not charged when a partner of the firm is a Member of the Society. Firms and Companies may secure these privileges by the Membership of one or more of their partners.

SOCIETY'S JOURNAL AND OTHER PUBLICATIONS.

Every Member is entitled to receive, without charge, a copy of the Journal of the Society, each Volume of which contains articles and communications by leading authorities on the most important agricultural questions of the day, together with official reports by the Society's Scientific Advisers and on the various departments of the Show, and other interesting features. Copies of the Society's pamphlets, sold at not less than One Shilling each, are obtainable by Members at half price on direct application to the Secretary.

LIBRARY AND READING ROOM.

The Society has a large and well-stocked Library of standard books on agricultural subjects, which have been catalogued, and can now be borrowed by Members. A Reading Room is provided at which the principal agricultural newspapers and other periodicals can be consulted by Members during office hours (10 a.m. to 4 p.m.; Saturdays, 10 a.m. to 2 p.m.).

CHEMICAL PRIVILEGES.

The Society makes annually a considerable grant from its general funds in order that Members may obtain at low rates analyses of feeding stuffs, fertilisers, soils, &c., by the Society's Consulting Chemist (Dr. J. AUGUSTUS VOELCKER, Analytical Laboratory, 1 Tudor Street, London, E.C.4). Members may consult Dr. VOELCKER personally or by letter at a small fee.

VETERINARY PRIVILEGES.

Members can consult the Professors of the Royal Veterinary College, Camden Town, London, N.W.1, at fixed rates of charge, and they have the privilege of sending Cattle, Sheep and Pigs to the College Infirmary on the same terms as subscribers to the College.

BOTANICAL PRIVILEGES.

Reports can be obtained by Members from the Society's Botanist, Professor R. H. BIFFEN, F.R.S., School of Agriculture, Cambridge, on the purity and germinating power of seeds, and on diseases or weeds affecting farm crops, at a fee of one shilling in each case.

ZOOLOGICAL PRIVILEGES.

Information respecting any animal (quadruped, bird, insect, worm, &c.) which, in any stage of its life, affects the farm or rural economy generally, with suggestions as to methods of prevention and remedy in respect to any such animal that may be injurious, can be obtained by Members from the Society's Zoologist, Mr. CECIL WARBURTON, M.A., School of Agriculture, Cambridge, at a fee of one shilling in each case.

GENERAL MEETINGS OF MEMBERS.

The Annual General Meeting of Governors and Members is held in London in the month of December, during the week of the Smithfield Club Cattle Show. A Meeting is also held in the Society's Showyard in the summer.

ANNUAL SUBSCRIPTION OF MEMBERS.

The Annual Subscription of a Member is payable in advance on the 1st January of each year. Every candidate for admission into the Society must be proposed in writing by an existing Member. Forms of proposal may be obtained on application to the Secretary, at 16 Bedford Square, London, W.C.1.

SPECIAL PRIVILEGES OF GOVERNORS.

In addition to the privileges of Members, as described above, Governors are entitled to an extra copy of each Volume of the Journal, to attend and speak at all meetings of the Council, and are alone eligible for election as President, Trustee, and Vice-President. A Governor also receives a Silver Gilt Badge admitting him to the Show and to the Council and Governors' Rooms. The minimum Annual Subscription of a Governor is £5, with a Life Composition of £50.

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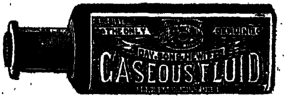

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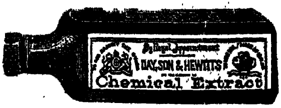

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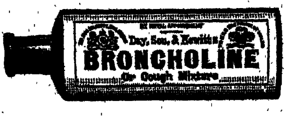

For Parasitic Husk, Coughs and Tapeworms in Calves, Lambs, Goats and Pigs. It allays Bronchial Irritation; destroys and expels all parasitic worms, soothing the Lungs.

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CURDOLIX. For White or Green Skit, "Curding," or Scour. (No mixing required.)
PORCINO PIG POWDER. For Pig ailments such as colds, Fits, Fever, &c.
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COD LIVER OIL POWDERS. For Weak Horses, Bad Feeders, Chest Troubles, &c.
HORSE BALLS. Black Physic, Diuretic, Worm, Grease, Cordial, Digestive, Constitution, Red Paste or Condition, Cough and Fever.

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FAIR PRICES FOR ALL.

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always requires milk of highest quality and will pay a good price for the best article.

FAIR PRICES FOR PRODUCERS.

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HYGIENIC TOWN DAIRIES.

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C.W.S. "Afric" Palm Kernel Cake and Meals

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MILLERS' OFFALS SUPPLIED FROM THE ELEVEN
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BASIC SLAG, SUPERPHOSPHATES, NITRATE OF SODA, SULPHATE OF AMMONIA, AND OTHER FERTILISERS.

ASK FOR **C.W.S. "Achilles" Binder Twine**

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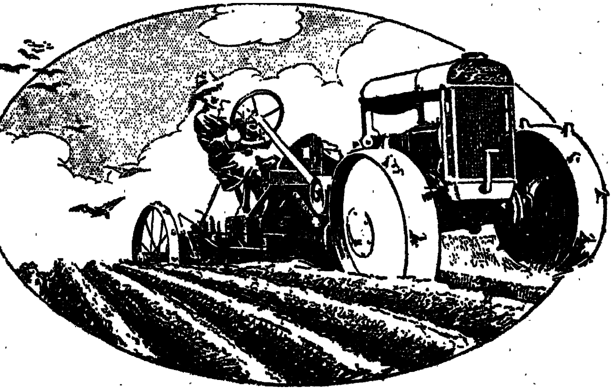
ALSO NOTTINGHAM AND LEEDS.



The Verdict of the Lincoln Trials.

JUDGE'S REPORT.

GLASGOW TRACTOR.—"This is a tractor of medium weight (1 ton 16 cwt.), which drives on all three wheels. On the heavy land it did good work, ploughing at a greater depth than was required. It was easy to handle, and good at turning at headlands. The ploughing of the light land was workmanlike. It did good work with a cultivator.

The special features of this tractor are such as to lead us to believe that it may be specially suitable for work on heavy land and hill-sides."

Draw-bar pull to skid driving wheels (in lbs.)	3,550
Sustained draw-bar pull ... ... ,,	2,800

P.S.—In the test the point of skidding was never reached.

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TRACTOR.

The "GLASGOW" will climb and pull a plough anywhere. It cannot turn over. It will not dig in, tip up, slip or skid—points of superiority due to all its three wheels being driven.

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1 Cwt. bags and under 1 ton -	**7/6 per cwt.**
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There is a great saving of carriage on 4 ton lots.

LIMBUX stored in a dry place can be used at any time.

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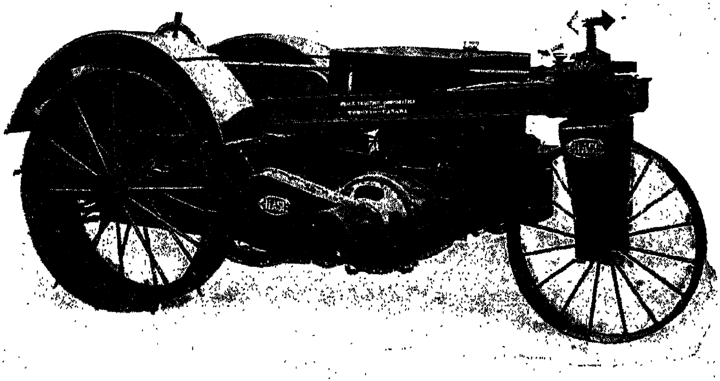
Chase 12-25 Farm Tractor

NO DIFFERENTIAL GEARS.

SURE FOOTING ON ROUGH GROUND AND SIDE HILLS.

OVERCOMES SIDE DRAFT.



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BOTH WHEELS GET EQUAL DRIVING POWER.

Manufactured in Canada at the largest, most modern and complete Tractor plant in the British Empire. The Chase is a simple, sturdy Tractor that is easily handled either in the field or for belt power. Heavy duty type Motor, specially designed for Tractor work, giving high efficiency on Kerosene or low-grade Gasoline.

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The Wholesale Trading Federation of Agricultural Co-operative Societies in England and Wales.

SUPPLIES everything the farmer requires.

BUYS everything the farmer produces through the local Co-operative Societies.

Feeding Stuffs,
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Seeds,
Machinery,
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Dairy Plant,
Corn and Grain,
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Eggs and Poultry,
Wool, etc.

FARMERS!

Combine for business purposes. We will supply the name and address of the Society covering your district on applying to:

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FOR . .

Enterprising Farmers

THE NEW OLIVER No. 7 Adjustable Tractor Plough excels in strength and durability, ease of adjustment, handling and adaptability.

It is simple in design and in operation. The depth of the furrow can be altered readily and easily whilst the plough is in motion.

Bottoms are interchangeable to suit varying conditions.

The No. 3 Tractor Sulky Plough

is supplied for deep tillage, such as potato land or where the land is so heavy or the ploughing so deep that the draft of a two furrow plough is too great to permit the tractor to be run economically.

Full particulars from the Oliver Dealer for your district or from—

The New Trafford Engineering Co., Ltd.,
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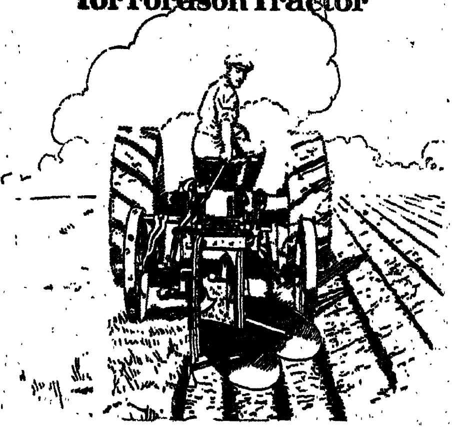
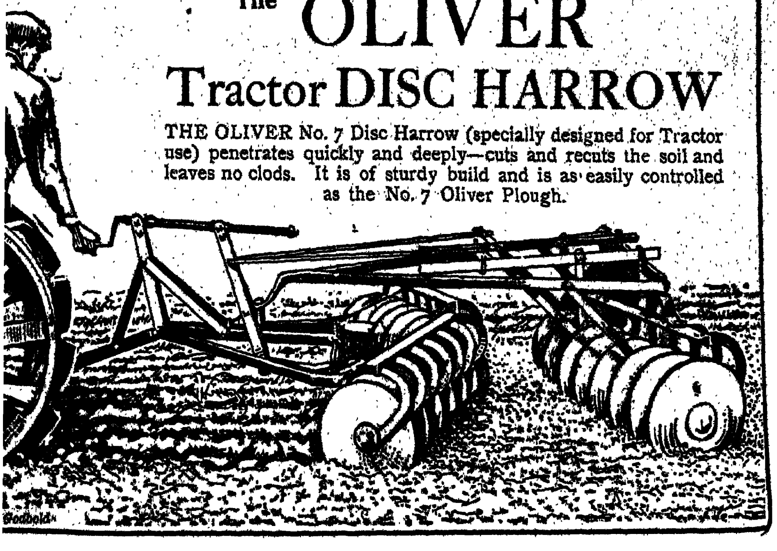
The New
OLIVER No. 7
Adjustable
Tractor Plough
for Fordson Tractor



The OLIVER
Tractor DISC HARROW

THE OLIVER No. 7 Disc Harrow (specially designed for Tractor use) penetrates quickly and deeply—cuts and recuts the soil and leaves no clods. It is of sturdy build and is as easily controlled as the No. 7 Oliver Plough.



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THE WAY TO PROFITABLE FARMING.

Special Compounds for every Crop

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The Austin Farm Tractor

The proved best!

EVIDENCE No. 1. Lincoln Trials:

The Judges' report (now issued) shows that the Austin Farm Tractor stands supreme among Tractors of under two tons in weight. Its average marks for ploughing acres per hour, cost of fuel consumption, cost per 100 lb, draw bar pull, TOP THE LIST—first in order of merit.

EVIDENCE No. 2. Silver Medals:

The most important Agricultural Societies Meetings held in Great Britain during 1919 were those at Peterboro', Durham, Warwickshire, Cheshire (Altrincham). In each case, the highest award for a Tractor—THE SILVER MEDAL—was bestowed upon the Austin Farm Tractor.

EVIDENCE No. 3. Ploughing Competition Prizes:

The famous Yorkshire Ploughing Matches this year, for the first time, opened the field to Tractor ploughing. On January 15th, one Austin Tractor competed, and took the FIRST Prize at Hutton Rudby. On January 16th, two Austin Tractors competed at Stainton in Cleveland, and took the FIRST and SECOND Prizes with two ploughs of different makes.

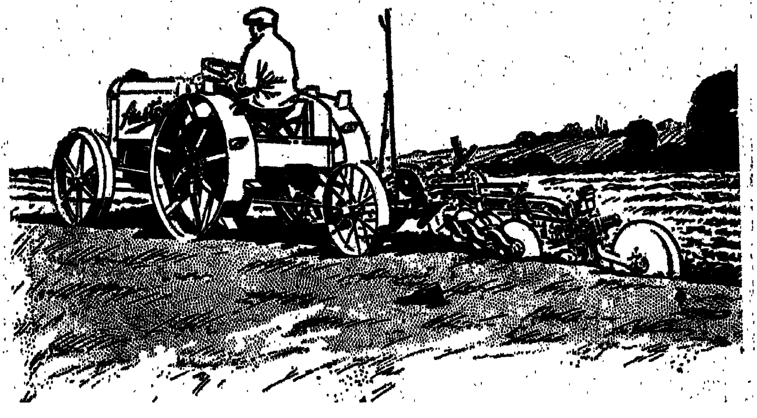
EVIDENCE No. 4. Sales:

These are phenomenal and constitute the best evidence of all since the British Farmer places his order for a Tractor only after careful scrutiny and practical test. Deliveries at 100 per week will commence in March rising to 200 a week in time for the Autumn Ploughing.

The AUSTIN MOTOR Co., Ltd., Head Office: Northfield, Birmingham

Telegrams: "Speedily, Northfield." Branches at LIANCOURT & BRUSSELS Telephone: King's Norton 230

London: 479-483 Oxford St., W. **Manchester: 130 Deansgate**



The Farmer's Costly Guest.

NO class has suffered more from the existence of the Rat plague than the farming community. Their losses alone through rat damage have been assessed at £15,000,000 per day.

As a natural consequence, Farmers throughout the country have always been anxious to test the effectiveness of Rat exterminators.

The following extracts from their testimonials are indicative of their appreciation of the *proven* scientific extermination of the Rat Pest.

"The Virus has proved to be thoroughly effective up to the present."
"At C——, L——, and B——, the Rats have almost vanished."
"At S——, the Rats have wholly disappeared."
"Since the third application, no trace can be found of Rats—dead or alive. This is very satisfactory."

"Liverpool" Virus is not injurious to human beings or domestic animals. It is urged that the Virus be used regularly, because its periodical employment will ensure a lasting result. "Liverpool" Virus can be obtained by post direct from **Evans Sons Lescher & Webb, Ltd., 56 Hanover Street, Liverpool; and 60 Bartholomew Close, London, E.C.1**; or from all Chemists.

"Liverpool" Virus is not a poison and therefore overcomes the acknowledged difficulty with other exterminators.

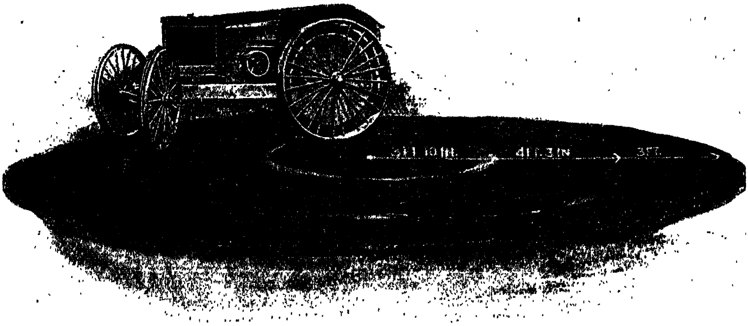
The manufacturers will be pleased to give any advice possible regarding the extermination of rats, and correspondence as to the procedure in special circumstances is invited.

"Liverpool" Virus for Rats is supplied on bait ready for use in 2/6 and 6/- tins, for mice in 1/6 tins; in this form the Virus involves no trouble in use. It can be obtained without bait if required in 2/6 and 8/- tubes for Rats, and 1/6 tubes for Mice.

"Liverpool" Virus

FOR EXTERMINATING RATS AND MICE.

THE ROLLS ROYCE OF TRACTORS.



THE PARRETT.

It speaks for itself.

12–25 H.P.

ONE MAN. **ALL PURPOSES.**

There is NO work on the Farm that a Tractor is called upon to do that the PARRETT cannot carry out, from Ploughing the heaviest Land to Rolling Corn. Being governor controlled, it will drive a Threshing Machine as steadily as Steam.

IMMEDIATE DELIVERY.

The Agri-Tractor Contract Company, Ltd.,

ROYSTON, HERTS.

TELEPHONE: 42 ROYSTON. TELEGRAMS: TRACTORS.

Farm Seeds of Every Description.

ENSILAGE SEEDS A SPECIALITY.

For the most Profitable Crop

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LINSEED!

WE SUPPLY THE BEST STOCK.

Sufficient seed to plant an acre, 35/-. Carriage paid, 4 acre lots and upwards. Sacks and bags extra.

Write us for our free Booklet, "ALL ABOUT LINSEED."

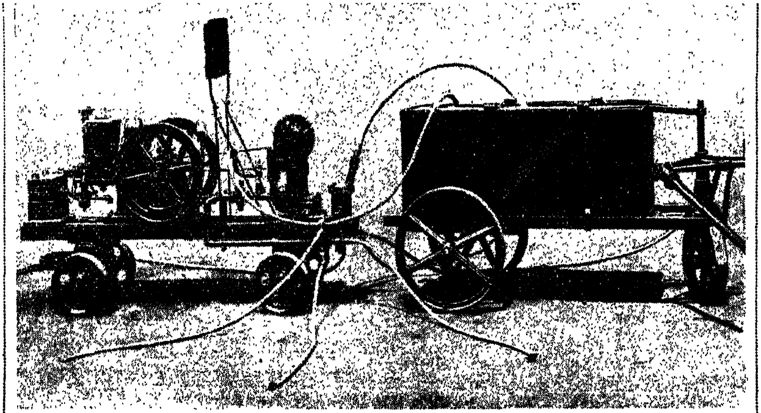
BLUE FLOWERED LUPINS FOR SEED AT MOST REASONABLE PRICES.

Cleaners and Exporters of all Clovers and Grasses.

Eastern Counties' Farmers' Co-operative Association, Ltd.,

IPSWICH.

Telegrams: "Farmers, Ipswich." Telephone: No. 75 (2 lines).



The "Stone-House"

Super Power Sprayers are practical in every feature

Their power units, paraffin driven, are mechanically very simple in operation, yet of adequate power; the pump details are very strong, sound, and efficient; while the containers—one of 120 gallon, the other of 100 gallon capacity—are sound throughout and mounted on strong wheels. One—Type "A," drives up to 12 nozzles, the other—Type "B" (illustrated), up to six; and we will very gladly give you complete information on hearing from you.

The "STONE-HOUSE" Insecticides and Fertilisers are of supreme quality.

There is not a superfluous ingredient, or an imperfect one, in any of them. They are of quite unusual potency, and their quality is absolutely consistent. We pay little heed to attractive, cost-raising packages—all the value is in the product itself.

Among the wide range of "Stone-House" Insecticides, Fertilisers, &c., is something to cover, we believe, every need. May we forward you all details? We should be glad to hear from you.

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London . . B. W. Peters, 36 & 38, Hatton Garden, E.C. 1
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ENGINEERS.

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DID YOU SEE IT AT THE
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IF NOT SEND FOR LIST OF OUR
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PARAFFIN ENGINE.

THE MOST POWERFUL AND ECONOMICAL
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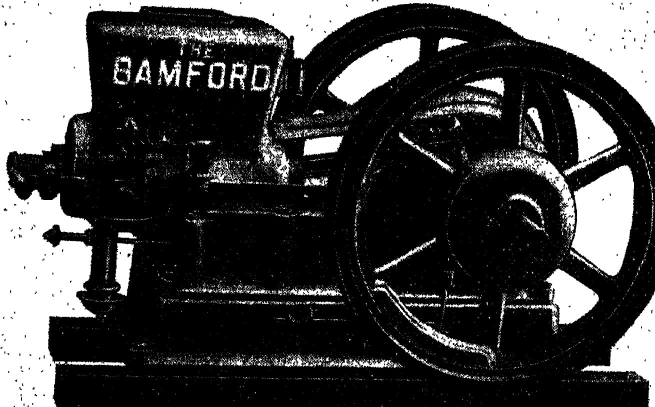

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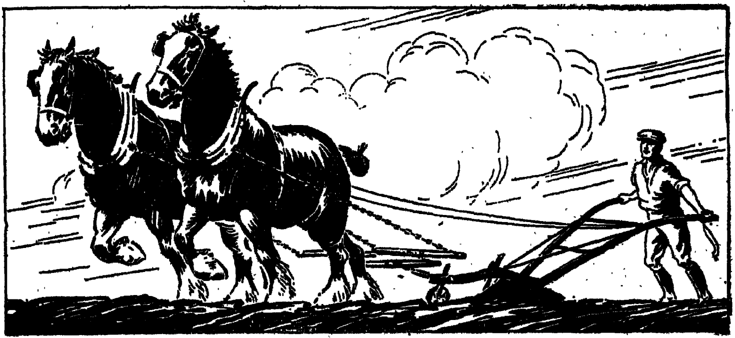
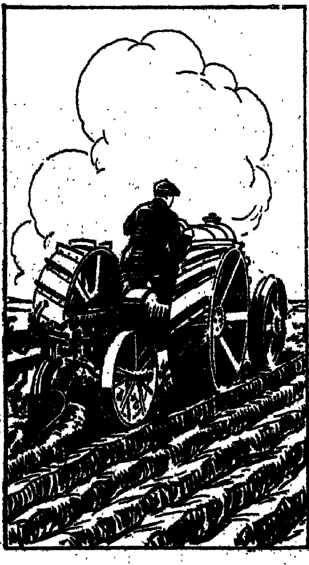


YOU WOULD'NT ILL-TREAT YOUR HORSES

THEN WHY FORCE YOUR TRACTOR TO WORK ON INFERIOR LUBRICANT?



AGRICASTROL is the best lubricant and gets the best work out of your tractor.

Besides, it cuts your lubricant and repair expenses in half.

C. C. WAKEFIELD & Co.,
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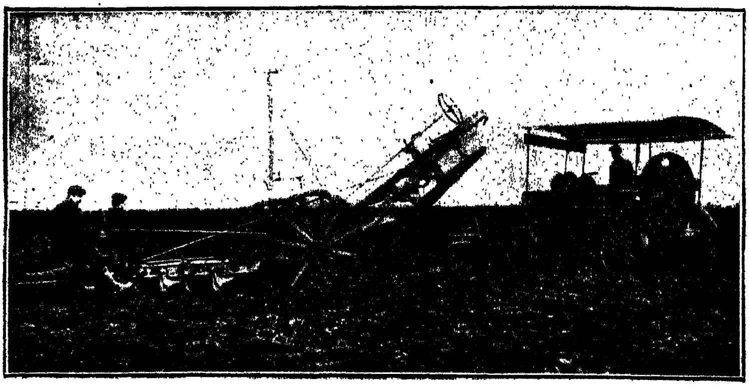
Wakefield House,
CHEAPSIDE, LONDON, E.C.2.

WAKEFIELD
Agricastrol
FARM TRACTOR OIL



The illustration above shows how we apply electricity to farming. We can apply it to anything, and we want your enquiries for anything electrical, even if you only want a lamp. We can supply everything connected with electricity at competitive prices.

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Automatic Electric Installations

For Lighting and other purposes.

SELF STARTING.
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SELF STOPPING.

A post card will bring you all the information you want relating to electricity for any purpose. Large stocks are carried, and immediate delivery can be made of almost every electrical requisite.

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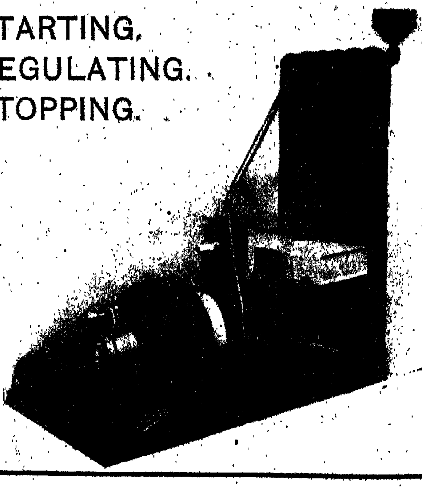

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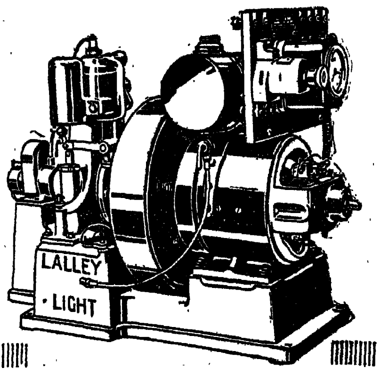

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We carry large stocks of everything electrical.

The plant is a complete unit installation with Engine, Dynamo, Switch and Instrument Board, and Fuel Tank, all built on one cast-iron base ready for dropping on concrete foundation. Price complete, including water tank, exhaust piping, storage battery and connections.

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Plants may be seen in operation.

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BURTON DRIED GRAINS

MADE ENTIRELY FROM

FINEST FRESH ALE GRAINS.

Highly Recommended for Cattle, Sheep, Horses,
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A VALUABLE AND ECONOMICAL FOOD

Guaranteed to Keep and to give satisfactory results,
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It is now recognised that seeds from Scotland, owing to their hardness and vigour, produce better crops in England than from any other source. We buy direct from the Ayrshire Growers and are probably the largest Seed Cleaners in Britain—our plant is capable of cleaning ten to fifteen tons per day.

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Italian Ryegrass. **Westerwoldicum.**

"Perenital." A cross between Italian and Perennial.

Late Red Clover. **Wild White Clover.**

and all other ordinary varieties of Seeds.

Pastures.

Our famous "**CASTLEHILL**" Mixture has solved the difficult problem of producing good pastures in two to three years.

We sell **Thousands of acres** to the most progressive farmers.

Price 80/- per acre.

Try a few acres and you will soon place your whole order with us.

We can double your Pastures.

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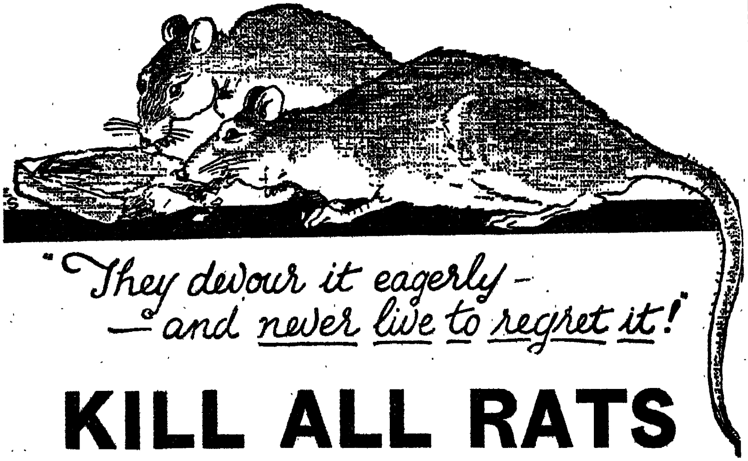
BUY A TIN OF EXTIRMO TO-DAY!


"They devour it eagerly—
—and never live to regret it!"

KILL ALL RATS

and mice. Besides being very destructive Rats and Mice are great carriers of disease. Kill them with Extirmo. It is an infallible vermin destroyer. Extirmo has stood the test for years, it is not untried, it is certain. It does not lose its effectiveness, no matter how long you keep it, or what climate you keep it in. Full instructions with every tin—simple—easy—efficient. EXTIRMO is sold by all Chemists, Stores, etc., in Tins.

GET A TIN TO-DAY, 7d., 1/3, 2/6, 5/-

If any difficulty in obtaining locally we will post direct on receipt of price plus postage. Postage extra 1½d. on 7½d. size; 2d. on 1s. 3d. size; 3d. on 2s. 6d. size; 6d. on 5s. size. Other makes of EXTIRMO for Beetles and Cockroaches.

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If you are not already stocking EXTIRMO you should. It is a ready seller and is absolutely effective. Write to-day to the manufacturers—

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FLY REELS

For any climate. Retain their stickiness for two years. We have made millions of these for H.M. Government; also FLY GUM sold in bulk, as used on our own manufactured fly reels.

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UNSURPASSED FOR STRENGTH AND QUALITY.

BUFFALO BRAND BINDER TWINE

Entirely BRITISH MADE.
Once used always ordered.

HOLDS THE FIELD!

Sole Proprietors and Manufacturers:

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ONLY THE TRADE SUPPLIED.

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of every description and for all purposes.

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"The Ideal for the Agriculturist."

DEMONSTRATIONS AT THE R.A.S.E.
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"Atomic Energy."

RADIUM AND LARGE CROPS OF VEGETABLES.

To the Editor of the "Daily Express."

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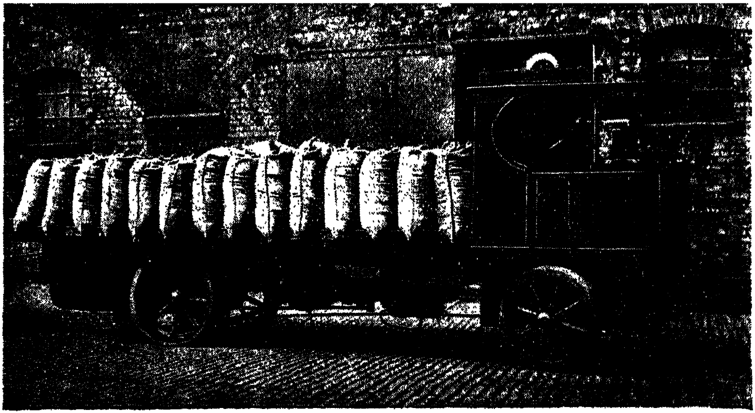

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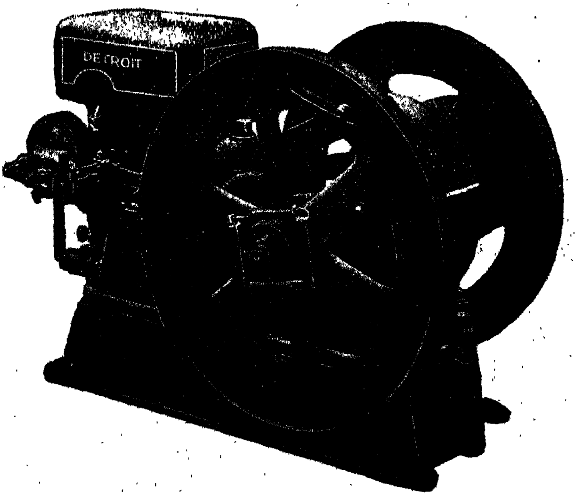

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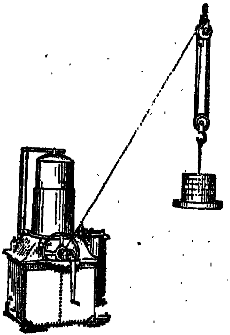

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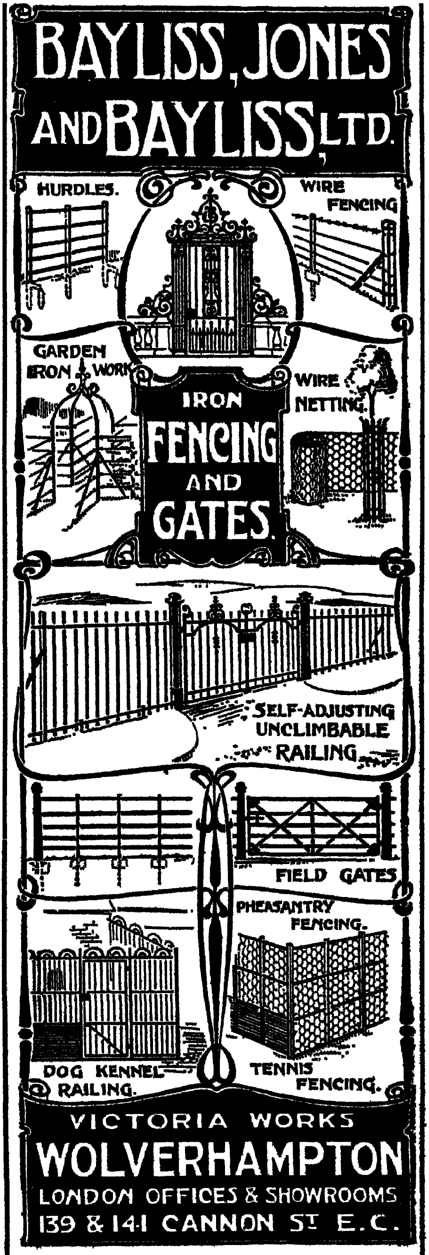

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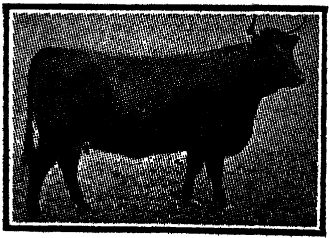

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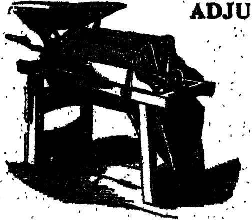

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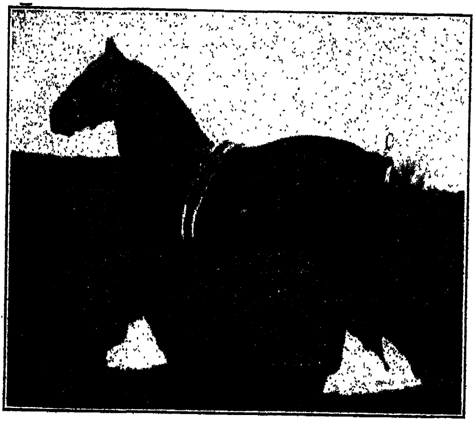

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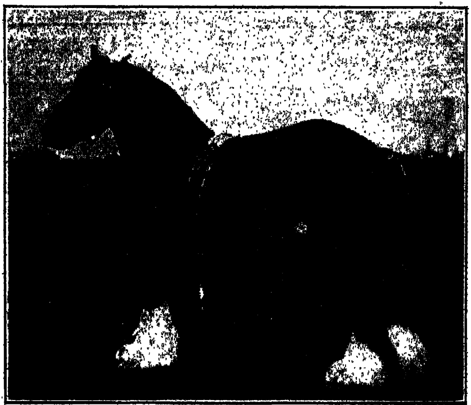

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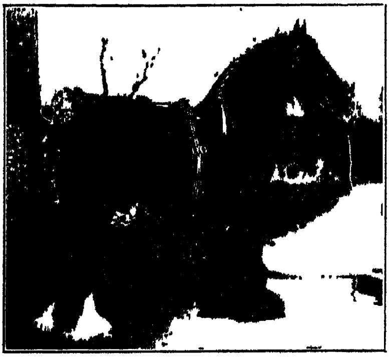

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STUD HORSES:

Boro' Draughtsman 34567. Sire, Walton Draughtsman 27895; dam 72776 Towthorpe Cloudy. Purchased in 1918 at Edgcote Sale at the highest price of the year

Sussex Goalkeeper 34365. Sire, Champions Goalkeeper 30296; dam, 62037 Sussex Plum. Purchased at Newmarket Shire Sale at top price in the Sale.

This Stud, besides the above Stallions, possesses others of the best breeding in the country, and the Brood Mares are representative of all the best Shire families.

PEDIGREE DAIRY SHORTHORNS

The Herd includes the best Dairy Shorthorn families in existence. Only Cows giving a minimum of 8,000 lb. retained; among these is Leazow Barrington, purchased at Attwater's Sale for 1,100 gs., the record price for Dairy Shorthorns. Daily milk records checked by D.S.A.

The Stock Bulls from heavy milking strains are:—

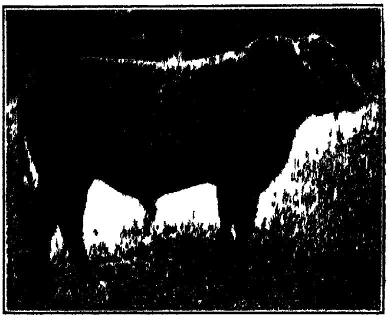
(1) **Active Lad 134511** (Grenfell's). Sire, Waterloo Firebrand 123518 (Potter's); dam, Active Lass.

(2) **Apley Record Rosador 134663** (Perkins). Sire, Puddington Rosador (Sanday); dam, Clarence Browny 12th.

(3) **Thornby Peer.** Vol. (Wills). Sire, Thornby Pioneer 133922; dam, Gladys Rose 12th.

BETSY GREY 99791.

Winner of numerous prizes including two Firsts, Dairy Show, 1919, giving an average of 61 lb. during the Show.



Calved 27th November, 1918.

PEDIGREE SUSSEX BEEF CATTLE

The ideal breed for Argentine, South Africa, and wherever hardiness and robustness of constitution are required.

The Sussex Herd was formed mainly by the purchase of the best cows at the famous Lock Dispersal Sale, and comprises Betsy, Heedless, Darkie, Beauty, Millmaid, and other prize-winning strains.

Champion Royal, 1919.

PEDIGREE SOUTHDOWN SHEEP

The Southdown Flock is registered and individually numbered. It is unexcelled for type, character, and merit, and bred the Royal and Chichester Champions of 1919.

At the R.A.S.E. Show, Cardiff, 1919, five Classes were exhibited and five First Prizes won, in addition to the Champion and Reserve Champion.

Pedigree Large White and Large Black Pigs.

The above Studs, Herds, and Flock are under the care of the most experienced managers in each Department. Perfect health is a first consideration; every animal on the estate has been selected or bred for the further improvement of their respective Breed generally, and the Estate Stock in particular.

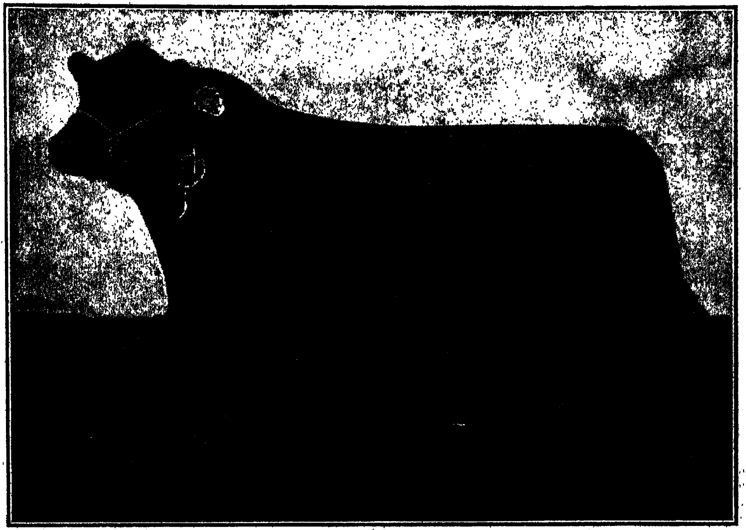
Young Stock of all above for Sale. Inquiries solicited, inspection invited. Station: Barnham Junction (L.B. & S.C.R.).

Apply: **THE ESTATE OFFICE, AVISFORD PARK, near ARUNDEL.**

BUCKLAND MANOR HERD

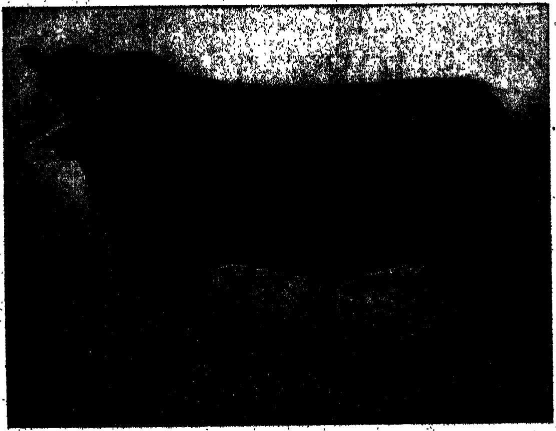
OF ABERDEEN-ANGUS CATTLE.

The Property of C. T. SCOTT, Esq., Buckland Manor, Broadway, Worcs.



ETRURIAN OF BLEATON 41498.

First and Champion, R.A.S.E. Show, 1919; First and Champion Cup, Highland Show, 1919.



PROUD GEORGE (38595).

Winner of 1st Prize Age Class and Reserve Champion at R.A.S.E. Show, 1919.

Young Stock always for Sale.

STUD & HERDS

THE PROPERTY OF

JAMES ISMAY, Esq., Iwerne Minster, BLANDFORD.

THE IWERNE MINSTER HERD

OF

BERKSHIRE PIGS.

THE IWERNE MINSTER STUD

OF

SUFFOLK PUNCHES.

THE IWERNE MINSTER HERD

OF

SHORTHORNS.

THE IWERNE MINSTER HERD

OF

SOUTH DEVONS.

APPLY TO

The ESTATE OFFICE, Iwerne Minster, Blandford,
Dorset, England.

Telegrams: "Iwerne Minster." Railway Station: Shillingstone.

LOOBAGH HERD

OF PEDIGREE

DAIRY SHORTHORNS

THE PROPERTY OF
SIR GILBERT GREENALL, Bart., C.V.O.,
Mount Coote, Kilmallock, Co. Limerick.

This Herd was established in 1912 by the purchase of the BEST SPECIMENS from the late Mr. George Taylor's Herd at Cranford, and other noted Dairy Shorthorn Breeders during the last seven years.

. The Herd is now composed of .
OVER 100 of the FINEST DAIRY
CATTLE IN THE BRITISH ISLES.

DAILY MILK RECORDS KEPT

which are regularly inspected by the Department of Agriculture's and Dairy Shorthorn Association's Inspectors.

WEEKLY BUTTER-FAT TESTS RECORDED.

All the Cattle are kept under NATURAL CONDITIONS and whilst living on the noted milk-producing land of the County Limerick it is unnecessary to force them in any way.

THE CATTLE ARE SUBMITTED TO THE
TUBERCULIN TEST TWICE YEARLY.

Young Bulls and Heifers for Sale.

Kilmallock is on the main line from Dublin to Cork, and is reached in under 14 hours from London, and 3½ from Dublin.

Apply: HENRY M. FILDES,
Estate Office, Mount Coote, KILMALLOCK, CO. LIMERICK.

CROSSHILL SHIRE STUD.

The Property of E. GOODWIN PREECE, Crosshill, near Shrewsbury.

MARES, FILLIES, & COLTS, of the most fashionable breeding always for sale.

The Lea Dairy Shorthorn Herd

Comprises **100 Pedigree and Non-Pedigree Cows and Heifers.** All directly descended, through their sires and grand-sires for generations from **1,000-Gallon Cows on both sides.**

Established in 1902 with four Heifers and a Bull from Lord Rothschild, which were of the best milking strains in the famous Tring Herd; one of the heifers being a daughter of the noted Darlington Cranford 5th, and another from Darlington Cranford 3rd. Additions have since been made from the herds of the late Mr. Geo. Taylor (Cranford), Mrs. Thornton (Kingsthorpe), and Mr. Saml. Sanday (Puddington), and special care has been taken to use only bulls from dams of the very highest milking records on both sides, the last seven used being:—

(1) **Waterloo Senator** (v. 64). Sire, Haddon Senator 120584, by Hermit 102494. Hermit's dam, Dorothy, gave in 1907, 1,229 gallons; 1910, 1,113 gallons; 1911, 1,285 gallons. Haddon Senator's dam, Martha's Pet, gave 844 gallons from March, 1912 to February, 1913.

Dam, Tofts Waterloo, which gave in 1912, 867 gallons in nine months; in 1913, 1,104 gallons (1,000 in nine months); in 1914-15, 1,061 gallons; and in 1916, 979 gallons.

(2) **Imperial Furbelow 120805,** red, bred by Mr. W. N. Pilkington. Sire, Tamini 104144 (out of Melody, which gave 1232 gallons milk in 1906, and won 1st Milking Trials R.A.S.E., 1st Milking Trials, Gold and Silver Medals, and Challenge Cup, London Dairy Show, 1905, &c.). Dam, Furbelow Princess 5th (which averaged 956¼ gallons for four years ending Sept. 30, 1914). Grand-dam, Furbelow Princess, which averaged 959 gallons for three years ending Sept. 30, 1912.

(3) **Waterloo King 97628,** red, bred by the late Mr. G. Taylor, and for some years used in the Cranford herd. Sire, Beau Sabreur 74049; dam, Waterloo Rose 2nd, gave 1,184 gallons of milk in 1905. Beau Sabreur's dam was a great milker and prize-winner.

(4) **Kelmscotonian 39th 95608,** red, bred by Messrs. Hobbs, Kelmscott. Sire, Red Waterloo 6th 82034 out of Lady Somerset Waterloo, which gave 1,102 gallons in 1902; dam, Lovely 37th, 1st prize London Dairy Show 1905. Average, 1,026 gallons per annum.

(5) **Darnley 80847**, red, little white, bred by Lord Rothschild. Sire, Magna Charta 77166 (out of Moppy Gem 2nd; average 3 years, over 995 gallons per annum); dam, Darlington Cranford 5th, 2nd London Dairy Show, &c., and averaged over 1,009 gallons per annum for five years.

(6) **Reformation 109883,** white, bred at Cranford, by Mr. G. Taylor. Sire, Stadborough Cran 104038 out of Darlington Cran by Beau Sabreur. She won many prizes and was from the same family as the noted Darlington Cranford 5th. Darlington Cran was sold by auction in 1909 for 190 guineas. She gave 1,187 gallons of milk during the year ending October, 1910, and was dam of Red Rose A, which gave 1,196 gallons year ending January, 1911, and was sold for 100 guineas at Cranford Sale, 1911.

(7) **Rattler 89755,** red, bred by Lord Rothschild. Sire, Magna Charta (as above); dam, Lady Rosedale, which averaged over 924 gallons per annum for six years.

The herd is kept in a natural state. Several heifers and bulls have been sold for export.

Young Bulls, Bull Calves, Heifers, and Cows for Sale.

FOR FURTHER PARTICULARS APPLY TO THE OWNER:—

E. GOODWIN PREECE, Crosshill, Near Shrewsbury.

Station: Shrewsbury (1½ miles). Telegrams: "Cattle, Shrewsbury." Telephone: No. 207.

PRACTICAL FARMERS IN 57 COUNTIES
(whose Testimonials will be sent on application)
TESTIFY THEIR COMPLETE SATISFACTION
WITH THE LIVE STOCK WITH WHICH THEY HAVE BEEN SUPPLIED BY

E. GOODWIN PREECE, Live Stock Agent, SHREWSBURY.

Who attends the leading Fairs and Sales to buy on Commission.

CATTLE and SHEEP for FEEDING, DAIRY, or BREEDING.

SATISFACTION GUARANTEED. :: PERSONAL BUYING.

Home and Foreign Breeders supplied with Pedigree Stock of all kinds selected from the leading Studs, Herds, and Flocks.

Dairy Cows specially selected deep milkers.
Stall Feeders, Bullocks and Heifers.
Young Stock and Outlying Cattle.
Wethers for folding and grazing.
Ewes-in-Lamb.

Stock Bulls of reliable dairy or beef breeding.
Pedigree Stock of all breeds from reliable herds.
Shire Stallions, Mares, and Fillies of the best and weightiest type.

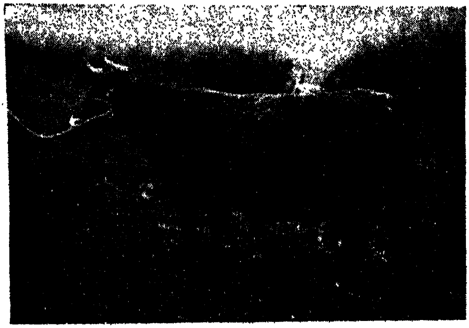
WRITE FOR PRICES.

Every assistance to Buyers. **Large numbers of Cattle and Sheep always on hand.**

Letters and Telegrams: PREECE, CROSSHILL, SHREWSBURY.

Fox Hill Herd OF PEDIGREE DAIRY. Shorthorns

The Property of Capt. Hon. E. A. FITZROY, M.P., Fox Hill, West Haddon, Rugby.



LADY WINDSOR 29th.
Gave 10,156 lbs. of milk from Oct. 10th, 1917, to Sept. 9th, 1918, and 12,300 lbs. from Nov. 3rd, 1918, to Nov. 2nd, 1919.

TELLURIA MAY 4th.
Gave 11,067 lbs. of milk from Jan. 12th, 1919, to Dec. 7th, 1919.

WREST WILD EYES.
Gave 7,102 lbs. of milk with her first calf, 1918-19.

The Herd consists of over 75 head, and is composed of families most noted for the fine dairy qualities, including representatives of Wild Eyes, Telluria, Windsor, Dew Drop and Madeline.

Stock Bull in use
DANDY 114984
bred by Lord Rothschild.

Daily Milk Records are kept, which are regularly inspected by the Northamptonshire Milk Recording Society.

Young Bulls and some Heifers always on Sale.

INSPECTION INVITED.

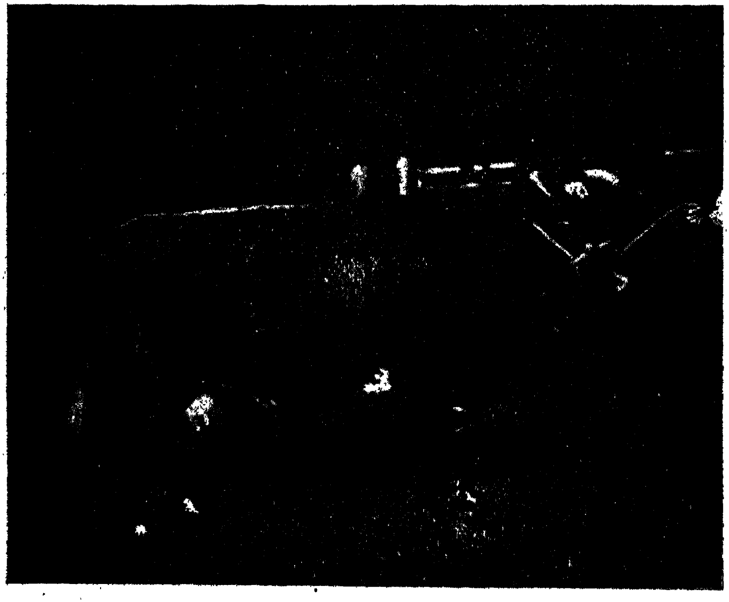
APPLY—
JOHN STRONG,
Herdsman,
FOX HILL FARM,
West Haddon, RUGBY.

Stat.: 2 miles, Long Buckby,
L. & N.W. Rly.

THE HEAN CASTLE SHORTHORN HERD.

THE PROPERTY OF

LORD MERTHYR, Hean Castle, Saundersfoot,
PEMBROKESHIRE.



"**CLIPPER PRIDE** (Vol. 58, page 737) calved 11th Dec., 1911. Bred by Lord Merthyr, Sire, Morning Star 109463; dam, Clipper Bride by Pride of the Herd 100,007"

Pedigree Shorthorns of the
Augusta, Beauty, Brawith Bud, Broadhooks Butterfly, Clipper, Jilt, Lavender, Missie, Orange Blossom, Princess Royal, and Secret Families.

STOCK BULLS:

Collynie Chancellor 119543; Hean Goldfinder 137017; and Edgcote Royalist [Vol. 65].

Hastoe Farm, Tring, Hertfordshire.

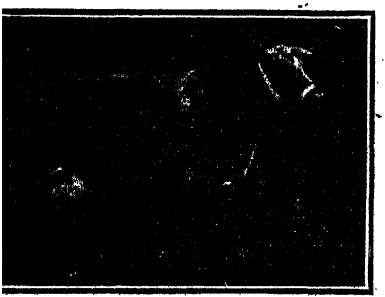
HERD OF

PEDIGREE DAIRY SHORTHORNS,

The Property of J. TIMBERLAKE.

Hastoe and Longcroft Farms, previous to 1915, were the late Lord Rothschild's Dairy Shorthorn Farms. The present Herd was founded with, and consists principally of, animals bred by the late Lord Rothschild, and stock descended from these Cows. The females are mostly by the celebrated Bulls Conjurer, Dreadnought, and Foundation Stone, all three out of Darlington Cranford 5th, and Dauntless and Danger Signal—both out of Dorothy.

TWO COWS SIRED BY CONJUROR.



STELLA. *Vol. 57, p. 1137.*

Milk yield October 1st, 1918, to September 30th, 1919, 9641 lb. Average yield, from date of first calf Sept. 18th, 1910, to Sept. 30th, 1919, for 9 years, 8,270½ lb.

AURICULA. *Vol. 58, p. 902.*

Milk yield October 27th, 1918, to September 30th, 1919, 12,526½ lb. Average yield from date of first calf, March 18th, 1914, to September 30th, 1919, for 5½ years, 8,917½ lb.

RECORDS AS PUBLISHED IN DAIRY SHORTHORN SOCIETY'S YEAR BOOK.

1915—16 Head averaged 7,179 lb.
1916—27 „ „ 6,678 lb.
1917—31 „ „ 7,180 lb.
1918—37 Head averaged 7,255 lb.
1919—38 „ „ 7,032 lb.

Daily Milk Yields, and Inspected by Dairy Shorthorn Society and Board of Agriculture.

STOCK BULLS:

DAUNTLESS DUKE 2nd. 136092.

Sire, Royal Chief by Foundation Stone, Dam, Rosebud 4th. Record for 1918, 10,545 lb.

Dam, Dorothy's Granddaughter. Milk yield: First Calf. September 5th, 1915, 6,085 lb.; Second Calf, August 16th, 1916, 8,354 lb.

G. Dam, Dolly Grey; average yield for six years, 9,974 lb.

G. G. Dam, Dorothy; average yield for eleven years, 10,536 lb. Champion Cow at London Dairy Show, 1909.

G. G. G. Dam, Darlington Cranford 4th; average yield for six years, 7,806 lb.

FRESHWATER ORLANDO Vol. 64.

Sire, Fairy Minestrel 125489 by Puddington Minestrel. Dam, Fairy Queen. Record for seven years, average of 8,037 lb.

Dam, Hadnock Charming Lass 3rd, average yield from date of first calf, July 16th, 1914, to September 30th, 1919, five years three months, 10,291 lb.

G. Dam, Charming Lass 2nd. Milk yield for April 5th, 1910, to April 25th, 1911, 10,080 lb.

YOUNG BULLS FROM BEST MILKERS FOR SALE.

Apply **J. TIMBERLAKE, Hastoe Farm, Tring.**

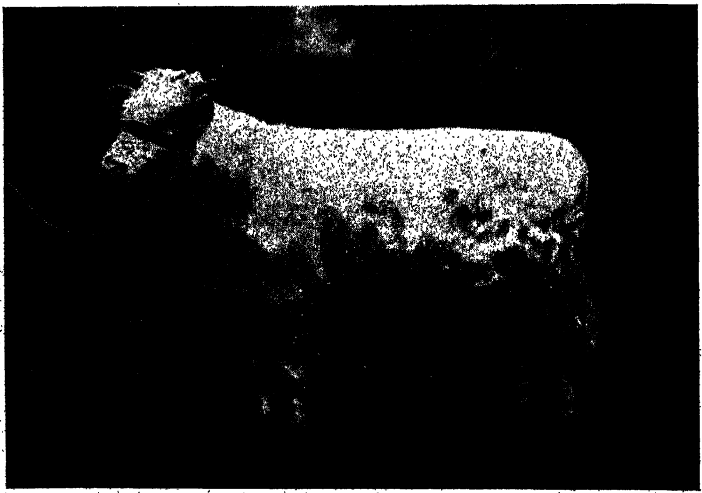
Station: TRING, L. & N.W.R. *Telephone:* TRING 42.

KINGSTHORPE HALL

PEDIGREE DAIRY SHORTHORN HERD

The Property of:

F. H. THORNTON, Esq., Kingsthorpe Hall, Northampton.



KINGSTHORPE DAIRY PILOT. Age 10 months.

◆

Dam DAIRYMAID 6th

Milk Record 1918 was 12,084¾ lb. in 320 days, and in 1919 was 11,442¾ lb. in 315 days.

◆ ◆

SIRE, SOMERFORD PILOT, whose dam, Somerford Flower 2nd, won over 20 First and Champion Prizes and gave an average of 12,286 lb. of milk for 3 consecutive years. Her butter-fat, when in full milk giving 6½ gallons a day was 4·2 per cent. in the morning and 4·8 in the evening.

PEDIGREE LIVE STOCK

. . PROPERTY OF . .

Messrs. CHIVERS & SONS, Ltd.

Shire Horses.

The Stud comprises over 50 Pedigree Mares. Young Stock by Champion Stallions always on hand.

Suffolk Sheep.

Holders of the Dawson Challenge Cup for the best small Flock of Suffolk Sheep. Winners at the Royal and other leading Shows. Rams and Ram Lambs for Sale.

Large White Pigs.

Over 1,000 Pedigree Pigs bred annually. Breeding Pigs live out all the year round. The Herd was very successful at the leading shows during 1919. A large selection of Young Boars and Gilts for Sale.

Dairy Shorthorns.

ROYAL FOGGATHORPE 133300.

The Herd numbers over 150 Head. Composed of the best Bates families. Daily Milk Records kept.

Stock Bulls:

ROYAL FOGGATHORPE 133300. **Sire:** Salmon's Favourite 117594, whose dam, Fedora gave 742 gallons with her first calf. **Dam:** Elsie Foggathorpe, a well-known prize-winner. She gave 11,724 lb. of milk from 21st February to 28th December, 1915.

WILD DON (Vol. 65). Winner First Prize, R.A.S.E., Cardiff, 1919. **Sire:** Oxford Don 132607, whose dam, Oxford Bride, won First and Silver Medal at the Dairy Show, 1908, and gave 10,163 lbs. of milk in 1915. **Dam:** Wild Eyebright 14th, who gave 11,568 lb. of milk from 13th August, 1916, to 8th September, 1917.

Young Bulls from recorded Dams always for Sale.

THE STOCK CAN BE SEEN BY APPOINTMENT.

Apply:—ESTATE OFFICE, HISTON, CAMBS.

KELMSCOTT **Old Established Herd of DUAL PURPOSE MILKING SHORTHORNS, Flock of OXFORD DOWN SHEEP and STUD OF SHIRE HORSES.**

Established over 40 Years. The Property of R. W. HOBBS & SONS, Kelmscott, Lechlade, Glos.

Herd of 500 Dairy Shorthorns. Milk Records kept. Numerous prizes won for Inspection, Milking and Butter Tests. The Gold Medal, "Spencer" and "Shirley" Challenge Cups were won at the London Dairy Show in 1914. The Fifty-guinea Challenge Cup for the Best Group of Dairy Shorthorns was won at Cardiff for the fourth successive Royal Show. Bulls and Bull Calves always on Sale. Four-cross Bull Calves at moderate prices suitable for non-pedigree dairy herds a speciality. All the Cows in Milk and the Stock Bulls have passed the Tuberculin Test.

4-Year Old In-Calf Cow, HELPMATE 18th.
Bred by Messrs. Hobbs. Sire, M.C. 25th. dam, Helpmate 11th.
(twice First at the Royal Show as a dairy cow.)

OXFORD DOWN FLOCK. One of the oldest and largest Flocks of Registered Oxfords in the country. Prizes won at the Royal Shows for many years. Rams, Ram Lambs, and Ewes on Sale. Rams sold annually at Oxford, Kelso, and Northampton Ram Fairs.

KELMSCOTT STUD OF SHIRE HORSES. Sound, active Colts and Fillies of all ages on Sale. Chief Stud Stallion: **Monks Green Clansman (34170)**, sire, Champion Clansman (29221); dam Monks Green Moss Rose (67909) by Birdsall Calamander (25916).

INSPECTION INVITED. Station: KELMSCOTT, 2 Miles. Telegrams: HOBBS, LECHLADE.

ASKE DAIRY SHORTHORN HERD.

The Property of **The Marquis of Zetland.**

BETSY GREY 2nd (Vol. 60. p. 740). First Prize Winner at Cardiff Royal Show.

THE Herd consists of long pedigree families of a dual purpose type carefully bred and selected for milk and constitution. Stock Bull now in use is Tockenham Baron 145933 whose dam, Waterloo Baroness 2nd, has averaged 10,363 lb. milk for 7 years. Daily Milk Records kept and inspected. Bulls for Sale.

Apply:— **F. W. HALL, Olliver, Richmond, Yorkshire.**

THE COOMB HERD OF SHORTHORN CATTLE

The property of SIR OWEN PHILIPPS, G.C.M.G.

Photo by Parsons. **KILSANT WANDERER, 143297.**

Sire : Bapton Reuben 114127

Winner of 1st prize, Birmingham ; also 1st and Reserve Champion, R.A.S.E., Cardiff, 1919.

Stock Bull : Bapton Reuben, 114127 (Red).

Animals from this Herd have won the Breeders Group Prize at Birmingham twice in succession, *i.e.*, 1919, 1920.

For particulars apply—**A. V. KEY, Coomb, Llangain, Carmarthen ; or**
D H. THOMAS, Coomb and Kilsant Estate Offices, Carmarthen.

Basildon Park Farms, Reading, Berks.

The Property of J. A. MORRISON.

CATTLE.

SHORTHORNS.—All the most fashionable Scotch families. Females kept in their natural condition for breeding. Stock Bulls: **Count Benedict** (an Augusta) and **Ardlethan Servant** (a Secret), **Norman** (a Princess Royal), **Collynie Grand Prince**, purchased at Mr. Duthie's sale for 2,000 guineas.

ABERDEEN-ANGUS.—Herd selected from all the leading families with a view to first-class beef production. Stock Bulls: **Evilentus of Ballindalloch** and **Idam of Basildon.**

RED POLLS.—Selected and bred for heavy milking qualities. First selection from Sudbourne, Necton Hall, Gressenhall and Harefield herds. Stock Bull: **Sudbourne Minor.** Young bull out of Sudbourne Minnie. Champion and Winner of "Barham" Cup, London Dairy Show. 2nd Prize Bull at Dairy Show, 1919. Daily Milk Records kept.

SHEEP.

HAMPSHIRE DOWNS.—Registered Flock No. 342. The original famed Fonthill Flock. 1,000 breeding Ewes. Rams bought at record prices. Prizes won in 1919 at the Royal Agricultural Show : 1st, Two-shear Ram ; 1st, Three Ewe Lambs ; 2nd Shearling Ram ; 2nd, Ram Lamb ; 2nd, Three Shearling Ewes ; 3rd, Three Ram Lambs. Ram Lamb let 1919 for 370 guineas.

PIGS.

BERKSHIRES.—Foundation herd carefully selected from best breeders. Stock replenished with 1st Prize Boar and 2nd Prize Gilt, R.A.S.E. Show, Cardiff.

TAMWORTHS.—Herd directly descended from Champion and Reserve Champion at last Royal Show.

GLOUCESTER OLD SPOTS.—Prolific breeders. Large well-grown pigs. Good markings.

All pigs have an extensive woodland range with constant exercise.

POULTRY.

Orpingtons, Wyandottes, and Mediterranean Breeds for egg production. Sussex, Old English, and Indian Game for table. Egg records kept. Sittings for sale. Utility and Exhibition fowls run under separate management.

Geese : Embden, Toulouse, and Chinese. Turkeys : American Mammoth and White Austrian. Ducks.

All stock open for inspection by appointment with the Farm Manager.

Station : Pangbourne, G.W.R. **Telegrams and Telephone : 78 Pangbourne.**

THE WESTWOOD COURT FLOCK OF KENT OR ROMNEY MARSH SHEEP.

The Property of **Messrs. L. & G. FINN, Westwood Court, Faversham.**

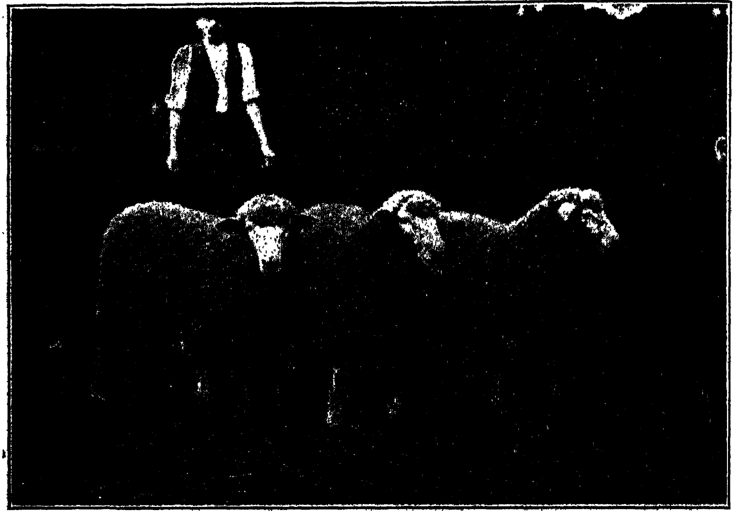


Photo by Sport and General.

Pen of Three Kent or Romney Marsh Ram Lambs (First Prize Royal Show, Cardiff, 1919).

Registered Flock, established 1866. Numerous prizes have been won at the leading shows. Wool has been made a special study. **Rams and Breeding Ewes for Sale. Inspection invited.**

The ELFORDLEIGH GUERNSEY HERD

The Property of Mrs. R. C. BAINBRIDGE, Elfordleigh, Plympton, S. Devon.

GUERNSEY COW "ELFORDLEIGH ROMA" 12043

Dam, Romula of Glynn 7078 Sire, Royalty 9th 2848. Born Feb. 4th 1916. Gave 8,604 lb. Milk, 4.7 Butter Fat as a 2-year old. First and Champion at Truro Show, 1919, and Reserve at Cardiff, 1919.

HIGH-CLASS PEDIGREE STOCK USUALLY ON SALE

The Anderby Herd of Lincoln Red Shorthorn Cattle

The Property of
Messrs. ROBINSON & SON, Anderby, Alford, Lincs.

This Herd has been in possession of the present owners since 1850. Especial consideration is given to size and abundance of lean flesh with good milking qualities. Young bulls generally on hand, either for sale privately or at the Lincoln, Boston, and Alford Annual Sales. Recent prizes won include 1st and 2nd for Cows and 2nd for Bull Calves at Alford Bull Sale October, 1919. Inspection invited by intending purchasers and others. *Station:* **Mumby Road, G.N.Ry.**

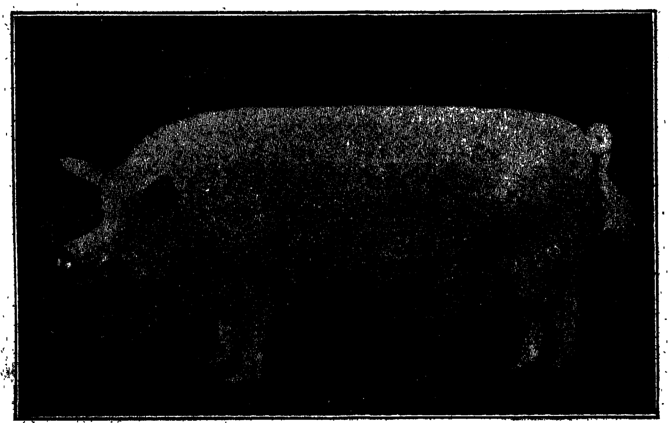
The Walton & Worsley Herd

OF

PEDIGREE LARGE

WHITE PIGS,

The Property of SIR GILBERT GREENALL, Bart., C.V.O.



WORSLEY JAY XXXV (20419).

First and Champion Boar, Royal Agricultural Society's Show, Cardiff, 1919.
Also First and Champion, Royal Agricultural Society's Show held at Manchester.

The whole of the famous Worsley Herd has been purchased from the late Earl of Ellesmere, and it is now combined with Sir Gilbert Greenall's noted Walton Herd at Walton Hall Piggeries.

At the ROYAL SHOW, MANCHESTER, 1916, the Herd obtained, in the EIGHT Classes for Large White Pigs, FIVE First Prizes, both CHAMPIONSHIPS and RESERVES, with home-bred exhibits.

At the ROYAL SHOW, CARDIFF, 1919, FOUR First Prizes and ONE CHAMPIONSHIP awarded.

INSPECTION AND INQUIRIES CORDIALLY INVITED.

Prices on application to

RICHMOND DAYBELL, Manager,

ROWSWOOD FARM, HIGHER-WALTON, Nr. WARRINGTON.

Telegrams: Daybell, Higher-Walton, Warrington.
Railway Station: Warrington, 2¼ miles. (Trains met by appointment.)

THE STETCHWORTH HERD OF LARGE WHITE PIGS.

The Property of The EARL of ELLESMFRE, WORSLEY, Near MANCHESTER.

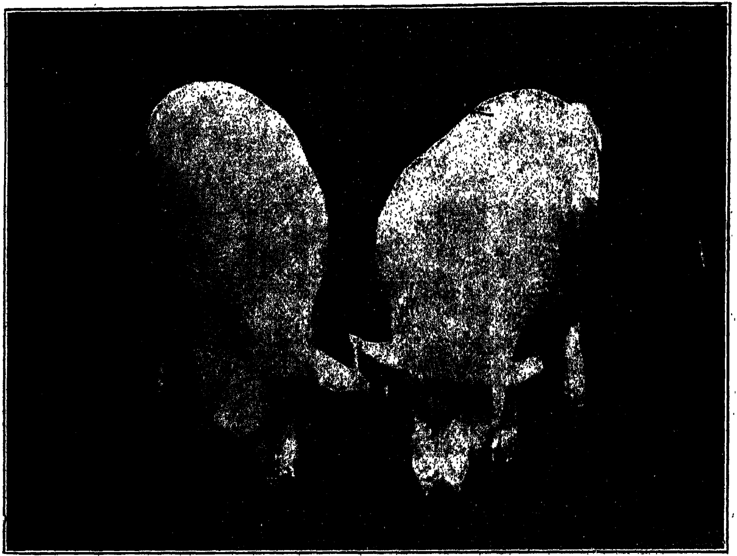


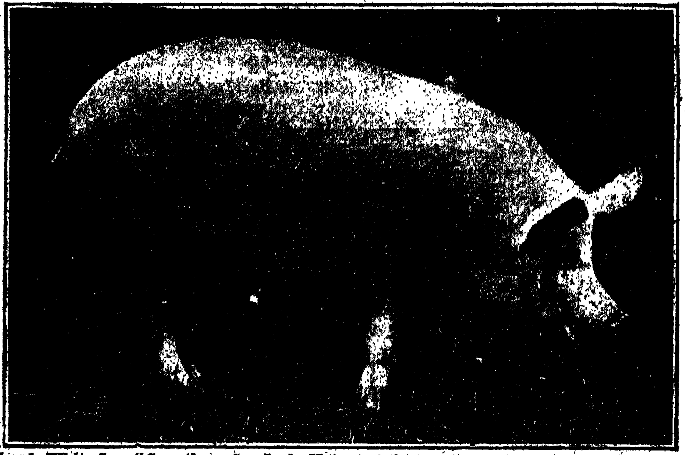
Photo by Sport and General Press Agency.

Pair of nine months old Gilts, First Prize at Smithfield Show, London, 1918.

Apply, W. F. GARDNER, Bridgewater Offices, Walkden, Near Manchester.

The Grantham Herd of Pedigree Large White Pigs

The Property of MR. JOHN FILLINGHAM, The George Hotel, Grantham.



Large White Sow "Grantham Gay Lady II." ***1st Prize R.A.S.E. Cardiff 1919.***

This Sow was sold for £250 to a Breeder whose name has not yet been disclosed, and is litter sister to Grantham Grand Lady, who was second in the same Class.

Boars and Gilts for Sale at moderate prices. For particulars address the

Owner—JOHN FILLINGHAM, THE GEORGE HOTEL, GRANTHAM, LINCS.

HISTON HERD OF MIDDLE WHITE PIGS

The property of JOHN CHIVERS, Esq., J.P.

HISTON PRIDE AND LITTER.—First and Champion R.A.S.E., Manchester.

ROYAL SHOW, 1916. **Boars.**—First and Champion, Second and Third. ***Sows.***—First and Champion, First and Reserve Champion.

ROYAL SHOW, 1919.—**Boars.**—First and Champion and Cup Best Middle White Pig. First and Reserve Champion and Second. **Sows.**—Two Seconds and One Third.

YOUNG STOCK ALWAYS FOR SALE.

ESTATE OFFICE, HISTON, CAMBRIDGE.

BEECHCROFT HERD of PEDIGREE MIDDLE WHITE PIGS

The Property of IVOR L. JAMES.

PRESTWOOD ACROBAT 1st 23197. Winner of 2nd Prize R.A.S.E., Cardiff, 1919.

PRESTWOOD ACROBAT 1st Stock Boar this season.

CHOICEST STRAINS ONLY KEPT.

Apply—**IVOR L. JAMES, BEECHCROFT, STAFFORD.**

THE CHARNWOOD HERD OF

LINCOLNSHIRE CURLY-COATED PIGS

The property of G. SIMPSON, Charnwood, Lowdham, Notts.

Some typical 16 months' old Gilts from the Herd.

A Magnificent lot of Gilts and Boars, all descended from prize winners, are on offer at moderate prices. Inspection invited.

These Pigs mature quicker than any other breed, and the quality is equal to any.

ARAB HORSES

JERSEY CATTLE

ALL PEDIGREE STOCK.

LARGE WHITE PIGS

White Wyandotte, Rhode Island Red and Houdan Poultry.
Buff Orpington and Fawn Runner Ducks.

The Property of S. G. HOUGH, Esq.,
SPRINGHOUSE PARK, THEYDON BOIS, ESSEX.

Stallions, Bulls and Boars at stud.
Young Stock for sale.

CASTLECROFT HERD
— OF —
PEDIGREE MIDDLE WHITE PIGS.
ESTABLISHED 50 YEARS.

Awarded 1 Gold and 26 Silver Medals and 2 Champion Silver Cups, besides numerous other prizes.

Boars and Gilts of highest quality and true to type always for sale at moderate prices.

Shipments to Foreign Countries carefully attended to.

Full particulars on application to the
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Chief Office: 21, IRONMONGER LANE, LONDON, E.C.2.
Manager and Secretary: R. R. WILSON.

The Property of MR. A. GORHAM, TELSCOMBE, LEWES.

ULTIMUS

Winner of the Manchester November Handicap and other races.

A brown horse (1907), by William the Third out of Merry Miser (dam of Chiselhampton, Orzil, Arabi, Merryman and the winners of £23,500), by The Miser (son of Hermit).

ULTIMUS is half-brother to Orzil (sire of the winners of 600 races and £53,083 in Australia) and to Boniface (a good sire in Belgium).

Fee: 9 Guineas Inclusive. Apply to A. GORHAM, as above.

BREEDERS' DIRECTORY.

HORSES.

Arab.

Hough, S. G., Springhouse Park, Theydon Bois, Essex. Pure-Bred Arab Horses at Stud. Nureddin II. is ex Nargileh by Rijm. Nargileh's sire was Mesaoud by Hadban. Rijm was ex Rose of Sharon, his sire was Mahruss, and his grandsire was Hadban. Nureddin II. stands 15h. 1in., is of true Arab character, with great bone and substance, beautiful shoulders and withers and grand hocks, fast in all his paces, docile, and of high courage. 2nd Newmarket, 1st Ranelagh, 1919. Fantass is ex Feluka, whose sire was Mesaoud. His sire is Rustem, who is own brother to Ramla, who won the 300-mile endurance test in America in October, 1919, open to all breeds. His g.g. dams were Rose of Sharon and Queen of Sheba. His g.g. sires were Merzuk and Mesaoud. Hadban was his g.g.g. sire. He is five years old, 14·1 high, dark chestnut, a fine mover and is regularly ridden by owner. Won a Special at Newmarket, 1919.

Clydesdales.

Clydesdale Horse Society of Great Britain and Ireland, 93, Hope Street, Glasgow. Archd. MacNeilage, Secretary. Volume XLII. will be published early in 1920. Entries for Volume XLIII. will close on September 30, 1920. Some previous Volumes of Stud-Book on Sale, price 10*s.* each; half-price to Members.

Graham, Robert, Kaimflat Farm, Kelso. Breeder and owner of high-class Clydesdale Stallions, Colts, and Fillies; most fashionable blood. Large selection. Inspection invited. Station: Kelso, N.E. and N.B. Railways.

Hackneys.

Garston Manor Stud, Watford. W. W. Bourne, Proprietor. Breeder and Exhibitor of pedigree Hackney Ponies. Most successful Harness Pony Stud in England. Ponies always on sale. Stud Pony: Supreme Champion Fusee.

Holden, William, Stud Farm, Chevin, Belper, Derbyshire. Hackney Stallion and Mares, best blood, with size, quality, and action, always on hand for sale; good colours. Also mares in foal to noted sires.

Hackneys and Roadsters.

Nicholson, Dixon, Watton Grange, Cranswick, S.O., Beverley. Stallions, Mares, and Fillies from the best brood.

Polo Ponies.

Pelly, H. R., Lyndsay's Farm, Ingatestone, Essex. Aviator, Registered Polo Pony Stallions at Stud. Full Particulars. Apply as above.

HORSES—*continued.*

Polo, Riding and Harness Ponies.

Taylor, C. Howard, Middlewood Hall, Barnsley. Good young Polo Ponies always for sale, bred from Mares which have been good players and prize-winners; also a few under-sized Ponies suitable for racing in India. Polo-bred Stallions; Field-Marshal, Favourite (sires of winners), and Calcium, all prize-winners, and registered by Board of Agriculture as sound.

Thoroughbreds.

Dickinson, George, Cark Mills, Cark-in-Cartmel. Thoroughbreds, Hunters, Shires, all ages, thoroughly trained and unbroken. Best Yorkshire, Cumberland, Westmorland, and Lancashire blood. Nearly all prize-winning stock. 725 prizes won, including R.A.S.E., London, Royal Lancashire, Great Yorkshire, Altrincham, Wirral. Championships: London, North Lonsdale, Cartmel, Warrington, Ramsbottom, Southport, Windermere, Ormskirk and Westmorland County. Prices reasonable. Communications and inspection invited.

Shires.

Ashby Folville Stud (F. N. H. and M. M. Smith-Carington). First-class Stallions for hire and service. Agent, W. Stallard, Worcester; Stud Groom, J. Sansby, Ashby Folville, Melton Mowbray, Leicestershire.

Balderston, Thos., Argyle House, New York, Lincoln, has several high-class Stallions for hire and service at Frithville Stud, Boston, by Friar Tuck IV., King Cole VII., Blythwood Kingmaker, Babingley Nulli Secundus, &c. Apply to Owner.

Cooper, Major R. W., Eling Farm, Hermitage, Berks. Pedigree Shire Mares and Fillies, by famous sires, for sale. Station and telegrams: Hampstead-Norris.

Marden Park Shire Stud, the property of Sir Bernard Greenwell, Bart. 17 miles from London. One of the largest prize-winning and breeding studs in the country. Stallions for sale and hire. Particulars from J. W. Morgan, Estate Office, Marden Park, Woldingham, Surrey, who will be pleased to show the Stud by appointment. Telegrams: Morgan, Woldingham.

Pearson, Sir Edward E., Brickendonbury, Hertford. Stud horses: Dollas Empire 34701, Coleshill Forester 24149, Claydon Majestic, Vol. 41. Apply Estate Office, Brickendonbury, Hertford.

BREEDERS' DIRECTORY.

HORSES—*continued.*

Shires.

STERN, SIR EDWARD, FAN COURT, CHERTSEY, SURREY. Stud Horse: Lincoln Forest King 31591. Stallions, Mares, and Fillies usually for sale. Many prize-winners. For all particulars, apply, the Bailiff, Fan Court, Chertsey, Surrey.

Suffolks.

BLYFORD HALL STUD OF SUFFOLK PUNCHES. Typical Mares kept. Young Stallions for sale. Inspection invited. Apply, S. and H. Scrimgeour, Blyford Hall, Halesworth.

EDMUNDS, L., ESTATE OFFICE, CHOLDERTON, NEAR SALISBURY. Stud established 1895 by the late Mr. H. C. Stephens. The best strains and none but perfectly sound animals bred from Stallions, Mares, and Fillies always for sale. Station: Grateley, L. & S.W.R. Telegrams: Cholderton.

Various.

DICKINSON, GEORGE, CARK MILLS, CARK-IN-CARTMEL. Thoroughbreds, Hunters, Shires, all ages, thoroughly trained and unbroken. Best Yorkshire, Cumberland, Westmorland, and Lancashire blood. Nearly all prize-winning stock. 725 prizes won, including R.A.S.E., London, Royal Lancashire, Great Yorkshire, Altrincham, Wirral. Championships: North Lonsdale, Cartmel, Warrington, Ramsbottom, Southport, Windermere, Ormskirk, Westmorland County, and London. Prices reasonable. Communications and inspection invited.

LORT, MISS EURGAIN, CASTLEMAI, CARNARVON, NORTH WALES. Breeder of the Champion Hackney Pony Stallion, Royal Show, Cardiff. For sale. Young Mares and Stallions, Hackney and Welsh Cobs and Ponies. Rare old strain.

CATTLE.

Aberdeen-Angus.

CRAN, GEORGE, MORLICH, GLENKINDIE, ABERDEENSHIRE. Breeder of many noted Aberdeen-Angus cattle. Winner of Champion prizes at National and County Shows. Stock Bulls: Eclipse 2nd of Morlich 39277, Evocant of Ballindalloch 31903. Inspection invited.

CRIDLAN, J. J., MAISEMORE PARK, GLOUCESTER. Stock Bull: Idyll of Maisemore 36219; First Prize winner and Reserve Champion R.A.S.E. 1915, &c. The Herd has won 210 First, 134 Second Prizes, 29 Gold, 40 Silver Champion Medals, Smithfield Championships 1910, 1914, 1916, Reserve Championship 1915; final winner of King Edward VII.'s £105 Challenge Cup, 1914; awarded Championships, Norwich, 1907, 1910, 1911, 1912, 1915, Ipswich, 1911, 1912, 1914, York, 1912.

CATTLE—*continued.*

Aberdeen-Angus.

CURRAGH GRANGE ABERDEEN-ANGUS HERD. Families, Ericas, Prides, Blackbirds, and Legends, Stock Bulls, Legion of Curragh (two gold medals and four challenge cups) and Ephebus of Ballindalloch. Apply, R. Weller, Curragh Grange Farm, Curragh Camp, Co. Kildare.

DOONHOLM HERD consists of carefully bred cattle many of them winners at Highland and Royal Shows. Herd can be seen and catalogues obtained on application to Farm Manager, John Grant, or to Proprietors, Jas. Kennedy, Doonholm, Ayr.

FELTON PARK ABERDEEN-ANGUS HERD. Best Families. Particulars on application, Henry Watson, Felton Park, Felton, Northumberland.

GORTNASKEHY ABERDEEN-ANGUS HERD. Select herd of fashionable families. Young bulls and heifers usually for sale. David M. Rattray, Gortnaskehy, Ballybunion, Co. Kerry, Ireland.

HOYLES, GEORGE, SKIDBY MANOR, HULL. Polled Angus Cattle. Queen Mother. Erica and Prides Bulls and Heifers for sale. Proud Monarch 3rd of Skidby, first prize Yorkshire, second prize Royal Show. Inspection invited.

McAINSH, JOHN, CONGASH, GRANTOWN-ON-SPEY, N.B. Owner of the oldest Herd of Aberdeen-Angus Cattle in Strathspey. Bulls, Cows and Heifers always on sale. Inquiries invited.

SCOTT, C. T. Buckland Manor herd of Aberdeen-Angus Bulls. Cows and Heifers for sale. Apply, W. J. Day, Manager, Buckland Manor Farm, Broadway, Worcestershire.

Ayrshires.

AYRSHIRE CATTLE. Reputed largest pedigree herd in England. Inquiries invited for Bull and Heifer Calves all closely related to winners in inspection classes at Royal, Highland, Ayr, Kilmarnock, and milk yield classes at Royal. Wm. Gibson, Carrick House, Ellesmere Park, Eccles, Lancs.

British Friesians.

CHILLINGWORTH, A. F., AND SONS, HIGHWORTH, WILTS. Reddown British Friesians, Herd of 70 head. Bull calves and stock on sale by Wychnor YME (pure imported), and Reddown (imported) MURK, from heavy milking dams. Official Records.

BROWN, A. & J., HEDGES FARM, ST. ALBANS. Typical heavy milking prize-winning Herd. Only herd in which one cow has won first in inspection and also in milking trials.

BREEDERS' DIRECTORY.

CATTLE—*continued.*

British Friesians.

Official records. Stock Bull: Bles Albert, only son in Britain of the world-renowned Albert, champion bull of Holland.

Wallace, W. & R., Knebworth, Herts. All classes Friesian cattle. Stock Bull: Kingswood (imported) Ynte. Nominations open to approved heifers. Bull Calves from big heavy milking dams. Herd containing size, type, colour, and milking qualities seen by appointment. Station: Knebworth, G.N.R. Telegrams: Wallace, Knebworth Station.

Wordsworth, Christopher, Brooklands, South Godstone, Surrey. British Friesian Cattle. Herd contains five fully imported animals. Several 1,000 gallon cows; official records. Stock Bull: (Imported) Tredegar Prince of Holland. Station: Godstone, S.E.R. Telegrams: South Godstone.

Devons.

Charles Morris. Highfield Hall, St. Albans. This Herd has been the greatest winner at the principal Shows in recent years, wherever exhibited. Selections from this Herd have been exported to Australia, New Zealand, East and South Africa, Argentina, India, Brazil and the Continent. 250 to select from. Inspection by appointment. St. Albans half an hour by train from London.

Guernseys.

Breitmeyer, L., Rushton Hall, Kettering, Northants. Pedigree Guernsey Herd. Stock Bulls from prize winners and heavy-milking strains. Cows selected from leading herds. Glendon and Rushton Station, M.R.

Ferrand, G. F., Moreland Hall, Alton, Hampshire. Prize-winning Guernseys. In the E.G.C.S. Milk Tests, while in this herd, Belladonna gave 10,110 lb. with her first calf; Shamrock 12,021 lb. milk, 583 lb. butter-fat, with her fifth (her only daughters in milk are here). Primrose, 11,578 lb., and Fussey's Dora 11,614 lb., are still in the herd. Young Stock for sale.

Fowler, P. T., La Pastorelle, Icart, Guernsey.—Pedigree Guernseys, carefully selected from prize stock of the Island. Please state requirements. Established 1811.

Pedigree Guernsey Cattle. Pedigree Berkshire Pigs. G. P. Sanday, Puddington Hall, Neston, Chester, Station: Ledsham.

Pedigree Herd Prize-winning Guernseys, bred from Island strains. Bulls and Heifers for sale. Mrs. R. C. Bainbridge, Elfordleigh, Plympton, S. Devon.

CATTLE—*continued.*

Guernseys.

Wadlands Guernseys. Cows, Heifers and Young Bulls from choice dairy strains for sale. John Wm. Towler, Wadlands Hall, Farsley, near Leeds, Yorkshire.

Highland Cattle.

West Highland Auction Mart, Oban, N.B. Great Special Sales of Highland Cattle in May and October. The best available medium for the purchase of this class of stock. Commissions executed. Diary of Special Sales on application. Thomas Corson & Co., Ltd., Live Stock Salesmen.

Jerseys.

Cowdray Park Jersey Herd, Property of Major the Hon. Harold Pearson; 13 prizes and awards won 1919 at the Royal and Dairy Shows, including two champion prizes at Royal Show, Cardiff. Well-bred young Bulls, Heifers, and Cows often for sale. No objection to tuberculin test. Address, Cowdray Dairy, Midhurst.

Culverden Jerseys. Pedigree stock from the best prize-winning and milking strains. Milk records kept. Heifers, Cows and Bulls for sale. Apply Miss Lucas, Great Culverden, Tunbridge Wells.

Fairbanks, Reginald A., Pearcelands, West Hoathly, Sussex. Breeder of pedigree Jerseys. Cows, Heifers, and Young Bulls from choice dairy strains for sale at moderate prices. No objection to tuberculin test. Inspection invited. Station and telegrams: West Hoathly.

Jerome, Mrs., Bilton Hall, York. Pedigree Jersey Cows and Heifers, prize-winners, for sale.

Stern, Sir E. D., Fan Court, Chertsey, Surrey. Herd of Pedigree Jersey Cattle which have passed the tuberculin test. Many prize-winners. Bulls, Cows, and Heifers for sale.

Jerseys and Guernseys.

Fowler and de la Perrelle, Porter's Lane, Southampton, the largest importers of Jerseys and Guernseys. Cows and heifers calving all the year round. Bulls of the best strains. No objection tuberculin test. Moderate prices. Shipping attended to. Telegrams: "Importers, Southampton."

Herefords.

Bibby, Frank, Hardwicke Grange, Shrewsbury. Prize-winning Herefords, male and female, always for sale and export. Also Scotch Shorthorns, finest strains. Apply, Bailiff, Hardwicke Grange, Home Farm, Hadnall, Shrewsbury.

CATTLE—*continued.*

Herefords.

Hall, R. W., & Son, Bidney, Leominster. Telegrams: Delwyn. Old-established "Ashton" Herefords. The noted Tumbler Blood Count 30464, by the Champion Gainsborough in service. Young Bulls for Sale.

Hill, John Arthur, Orleton Manor, Herefordshire. Pedigree Hereford Cattle. Young Bulls and Heifers for sale. Telegraphic address; Hill, Orleton. Woofferton Station, two miles.

Llewelyn, Sir Leonard Wilkinson, K.B.E., Malpas Court, Newport, Mon. Pedigree Hereford Cattle; Polo Ponies.

Mansel Court Herefords; owner, **Capt. R. T. Hinckes, Mansel Court Hereford.** Bulls and Heifers by the famous Bull Starlight (28754) for Sale.

Kerries and Dexters.

Braishfield Manor Herd of Dexter Cattle. Prizes won 1915 include championship R.A.S.E., Nottingham, first London Dairy Show. Apply, Mr. W. G. Owen, Elmgrove, Braishfield, Romsey.

O.P.H. The Royal Dublin Society and English Kerry Herd Books' Registered Prefix for The Pure Kerry Oaklands Park Herd, Newdigate, Surrey. A representative Pure Herd of Kerry Cattle, Selection 100 Head. Apply The Foreman.

Palmer, Captain, R.E.—Pure Pedigree Kerries, Bulls and Heifers, all ages. Address: The Foreman, Oaklands Park, Newdigate, Surrey. Stations: Holmwood, Horley, or Faygate, L.B. and S.C. Telegrams: Palmer, Newdigate. 20 Registered Bulls for sale.

Kerries.

Wadlands Kerries. As milkers, creamers and fatteners cannot be beaten; small eaters; very hardy; suitable for private families. Cows and Heifers for sale. John Wm. Towler, Wadlands Hall, Farsley, Leeds, Yorkshire.

Lincoln Reds.

Evens, John, & Son, Burton, Lincoln. Lincoln Red Dairy Shorthorns, Won 3 challenge, 4 champion cups, over 100 money prizes, London Dairy Show. 1919 winnings include 1st, 2nd, 3rd, Dairy Class Royal, three firsts and Shirley £50 Challenge Cup, London Dairy Show, 1st Royal Norfolk, Peterborough, Leics., &c., 1917 average 758 gallons per Cow (60 per cent. Calf-Heifers). Young Bulls from guaranteed milkers on sale.

CATTLE—*continued.*

Lincoln Reds.

Stapleford Park Herd of Lincoln Red Milking Shorthorns. Always a few young Red Bulls on sale at reasonable prices from certified milkers on both sides. C. S. Harvey, Wymondham, Oakham.

Webb, Sir Henry, Lt.-Col., Bart., Llwynarthan, Castleton, Cardiff, Herd of Pedigree, Lincolnshire Red, also of **Kilforge, Holme Lacy, Hereford.** Breeder of Pedigree Friesian Cattle. Ballingham station, G.W.R. Telegrams: Hoarwithy.

Weigall, Col. A. G., M.P., "Petwood," Woodhall Spa, Lincs. Pedigree Lincoln Red Shorthorns. Dual-purpose Cattle kept. Prizes won, Peterborough, Oakham, Alford, London Dairy Show, 1919. Apply, Agent, Estate Office. Station: Stixwould. Telegrams: Woodhall Spa.

Longhorn.

Sale, W. H., Arden Hill, Atherstone. Longhorn Cattle winners; many prizes Royal and other Shows; good milkers; robust constitution. Invaluable for crossing.

Park.

Gurney, Major Q. E., Bawdeswell Hall, Norfolk. Park Cattle. Stock for sale.

Red Polls.

Astley, Major D., Little Plumstead Hall, Norwich. Daily record of each cow kept. Young Bulls and Heifers always on sale. Winners of many prizes at Norfolk, Suffolk, and Royal Shows. Inspection invited.

Bredfield House Herd of 50 Pedigree Red Polls. Property of J. H. Lachlan White, Esq. Heifers and Bulls bred from prize stock always for sale. Address, Bredfield House, Woodbridge, Suffolk.

Brown, Thos., & Son, Marham Hall, Downham Norfolk. Herd established 64 years. Powell strains predominate. Large number of prizes won, including in 1919 three Male Championships, one Female Reserve Championship, six 1sts, three 2nds, four 3rds and one 4th, at R.A.S.E., Norfolk and Suffolk shows. Daily milk records kept. Stock of all ages for sale.

Cooper, Major R. W., Eling Farm, Hermitage, Berks. Pedigree Dairy Red Polls for Sale. Station and Telegrams: Hampstead-Norris.

Gurney, Sir Eustace, Sprowston Hall, Norwich. Red Poll Herd. Stock Bull, Sudbourne Albert 11063, out of Dairy Show Winner.

CATTLE—*continued.*

Scotch.

Scotch Cattle and Sheep.—D. J. Chisholm Mackintosh, Dingwall, Scotland, exporter of Aberdeen-Angus, Shorthorn and West Highland Cattle, also Cheviot and Black-faced Horned Breeding and Feeding Sheep. Large range of stock on hand. Reliability and expert knowledge may be relied on.

Shorthorns.

Aske Herd Pedigree Dairy Shorthorns (the property of The Marquis of Zetland), consists of long pedigree families of a dual-purpose type, carefully selected and bred for milk and constitution. Daily milk records kept and inspected. Bulls for Sale. Apply, F. W. Hall, Olliver, Richmond, Yorkshire.

Barton, Bertram H., Straffan, Co. Kildare, Ireland. Pedigree Shorthorns. Large old-established herd Cruickshank on Booth foundation. Prize-winners; good milkers; sound constitution.

Brocklebank, Rev. C. H., Bartlow House, Cambs. Unique Herd of Bates Shorthorns, topped only with Bulls of the best pure-bred old English strains. Inspection invited. Apply F. F. Rootham, Estate Office, Bartlow, Cambs. Telegrams: Bartlow. Station (adjoining farm): Bartlow, G.E.R.

Chalcraft, James, Aldersnapp, Petersfield, Hants. Herd Pedigree Dairy Shorthorns. Awarded King's Prize best small herd Royal Counties Show, 1906. Also Pedigree Berkshire and Glos. Old Spot Pigs.

Cherry, Matthew, Lomond, Myroe, Co. Derry, Ireland. Breeder of Scotch Shorthorn Cattle. The families in herd comprise: Violet, Lavender, Secret, Butterfly, Broadhooks, Augusta, Eliza, Golden Drop, Rosebud, Lady Dorothy, Charlotte Corday, Bessie, Ury Maid, Clara, Marigold, Maria, Matilda, Rosemary. Stock Bulls: Scotch, Stamp, A Secret, bred at Uppermill, and Balcairn Boy, bred by F. L. Wallace, Esq.

Chillingworth, A. F., & Sons, Highworth, Wilts. Herd of 120 typical Dairy Shorthorns. Bull calves and stock excellently bred for milk for sale. Official records. Stock Bulls: Primrose Duke by Dreadnought, dam Primrose 3rd (dam of Elsie Foggathorpe); Kelmscott Freemason 61st by Cranford Freemason, dam Lovely 69th. Both sires 1,000 gallons milk each side.

Chivers & Sons, Ltd., Histon, Cambs. Long Pedigree Dairy Shorthorns, best milking families, daily milk records. Young stock for sale.

CATTLE—*continued.*

Shorthorns.

Cooper, Major R. W., Eling Farm, Hermitage, Berks. Pedigree Dairy Shorthorns. Station and Telegrams: Hampstead-Norris.

Desborough, Lord, K.C.V.O., Panshanger, Hertford. Pedigree Shorthorns. Young Bulls and Heifers for Sale. Type: Principally Scotch Blood and Dual Purpose. Principal Families in Herd: Waterloo, Miss Ramsden, Pye, Butterfly, Rosewood and Broadhook. Stock Bulls used in 1919, Nonpareil Champion (112667) and Hindley Royalist, Pure Princess Royal. Apply, Agent, Estate Office, Cole Green, Hertford.

Edge, S. F., Pedigree Scotch Shorthorns: Augusta, Broadhooks, Butterfly, Clippers, Lancasters, Missie. Constitution and good breeding powers encouraged by ample fresh air and exercise. Young Bulls and Heifers generally available for sale. Inspection welcomed. Gallops, Homestead, Ditchling, Sussex.

Faringdon, Rt. Hon. Lord. Pedigree Shorthorns of deep-milking strains. Bulls and Bull Calves for sale. Mr. Walter Crosland, Estate Office, Buscot Park, Faringdon.

Hayward, Victor, Bookham Grove, Surrey. Pedigree stock from prize-winning milking, and butter test strain. Bulls, Cows, and Heifers for sale.

Hobbs, C. H., Oldport, Oswestry. Dual purpose Shorthorns, good families. Bulls for sale. Station one mile.

Hobbs, Robert W., & Sons, Kelmscott, Lechlade, Glos. Herd of 500 Dairy Shorthorns; founded in 1877. One of the oldest and largest pedigree herds in existence. Milk, flesh, and constitution studied; daily Milk Records kept. Numerous prizes won for Inspection, Milking Trials, and Butter Tests. The Fifty Guinea Challenge Cup for the best group of Pedigree Dairy Shorthorns was won at Cardiff last year for the fourth successive Royal Show. Bulls and Bull Calves on sale, with prices to suit all buyers. Four Cross Bull Calves at moderate prices, suitable for non-pedigree dairy herds, a speciality. All the cows in milk, and the bulls have passed the Tuberculin Test. Station: Kelmscott, 2 miles. Telegrams: Hobbs, Kelmscott.

Holman, Michael H., Restronguet, Penryn. Shorthorns: Trethewey, Ruths, Carnations, Brilliants, Roun Kitty's. Scotch include: Butterfly, Broadhooks, Marigold, Rosemary and other tribes. Stock Bulls: Fairlawne, Prince Regent, Restronguet, Lord John.

CATTLE—*continued.*

Shorthorns.

KIRK, THOMAS, ABBEY MAINS, HADDINGTON, EAST LOTHIAN. Shorthorn Cattle. Many of the best Cruickshank families are represented in this Herd, viz.: Broadhooks, Princess Royals, Nonpareils, Butterflies, Goldies, Duchess, Clippers, Bessies, &c.

LAW, MESSRS., MAINS OF SANQUHAR, FORRES. Select Herd Scotch Shorthorns. Young Stock for sale. Herd always on view by appointment. Telegrams: Law, Sanquhar, Forres.

LISTER, MAJOR JOHN J., WARNINGLID GRANGE, HAYWARDS HEATH, SUSSEX. Railway Station: Haywards Heath. Telegraphic address: Warninglid. Telephone: Warninglid 5. Strict milk records of all cows kept.

LORD, J. WINSER, NORTHIAM, SUSSEX. Shorthorn Dairy Herd. Young Bulls for sale. Cranford Tring and Burton strains blood used for milking purposes.

MARDEN PARK SHORTHORNS. London 17 miles. The property of Sir Bernard Greenwell, Bart. Stock Bulls: Esmond 111713 and Marden Dane 5th, Vol. 62. This fine Herd of Shorthorns, with great adaptability for producing flesh, has been very successful in the showyards, including Royal Show at Manchester, 1916. Bulls and Heifers of the choicest breeding always on sale. Particulars from J. W. Morgan, Estate Office, Marden Park, Woldingham, Surrey, who will be pleased to show the Herd by appointment. Telegrams: Morgan, Woldingham.

MORRIS, CHARLES, HIGHFIELD HALL, ST. ALBANS. This Herd has been the greatest winner at the principal shows in recent years, wherever exhibited. Selections from this Herd have been exported to Australia, New Zealand, East and South Africa, Argentina, India, Brazil, and the Continent. 250 to select from. Inspection by appointment. St. Albans half an hour by train from London.

ODY, WICK FARM, PURTON, SWINDON. Dairy Shorthorns, long pedigrees, Bull Calves and Heifers generally for Sale. All Stock Bulls from 1,000-gallon Cows.

OLYMPIA AGRICULTURAL COMPANY, LTD., OFFCHURCH, NEAR LEAMINGTON. Large herd of long and short pedigree Dairy Shorthorns of highest quality and great milking properties. Best Bates and Westmoreland families are represented in this herd, which includes the pick of the late Lord Lucas's prize-winning herd. Young Bulls from great-milking cows always on sale.

CATTLE—*continued.*

Shorthorns.

PELLIPAR HERD OF PEDIGREE SHORTHORNS, the property of Lieut.-Colonel R. J. L. Ogilby, D.S.O., comprises carefully bred animals of the Brawith Bud, Butterfly, Clipper, Fragrance, Goldie, Nonpareil, Luxury, and Pye (Garnes) families. Stock Bulls: Count Crystal 108276, Edgcote Regalia 125396, Chief Mint, and Fairlawne Air Raid. Inspection invited. Telegrams and Railway Station: Dungiven, quarter mile. Apply Estate Office, Pellipar, Dungiven, co. Londonderry.

PORRITT, OLIVER W., HOTCHLEY, EAST LEAKE, near LOUGHBOROUGH. Shorthorn Cattle, best Scotch families.

RICKERSCOTE HERD OF PEDIGREE DAIRY SHORTHORNS. The property of Messrs. C. & E. Stephenson. Milk records taken daily. Bulls, Heifers, Calves, &c., always for sale. Apply, E. Harris Stephenson, Burton House, near Stafford.

ROSEBERY, EARL OF, MENTMORE, LEIGHTON BUZZARD. Best strain Scottish Shorthorns. Winner first and reserve champion R.A.S.E. Bulls and Heifers for sale. Apply Charles Edmunds, Mentmore, Leighton Buzzard. Station: Leighton Buzzard, L. & N. W. Ry.

SANDERS, J. W., GILMORTON, LUTTERWORTH.—Dairy Shorthorns combining milk with flesh. Winners at London Dairy Show, 1908, and Shorthorns Society's Prizes, Royal Dublin, 1909 and 1910; Oxford, Royal Counties, and Royal 1910; Oxford, Leicester, Northampton, and Warwick, 1912 to 1916. Average milk yield of herd for last year, 6,835 lb. Young Bulls for sale.

STRATTON, RICHARD, THE DUFFRYN, NEWPORT, MON. Oldest-established herd in the kingdom, milk and flesh combined. Bulls and Heifers for sale.

THORNTON, FRANK H., KINGSTHORPE HALL, NORTHAMPTON. Pedigree Dairy Shorthorns. Winner of many prizes, including First Prize Milking Trials, Royal Show, 1911, and First Prize Heifer Milking Class and Breeders Silver Medal Dairy Show, 1915. Breeder of First and Champion Bull, Royal Show, 1919.

TIMBERLAKE, J., HASTOE FARM, TRING. Pedigree Dairy Shorthorns. Daily milk records. Females sired principally by Tring Park Bulls: Conjuror, Dreadnought, Foundation Stone out of Darlington Cranford 5th, also Dauntless and Danger Signal out of Dorothy. Young Bulls for sale.

CATTLE—*continued.*

Shorthorns.

Welbeck Herd of Pedigree Shorthorns, the property of the Duke of Portland. Young Bulls and Heifers for sale from the best strains. Apply, Alex. Galbraith, Norton, Cuckney, Mansfield.

Winkhurst Herd, the property of A. H. L. Bohrmann, Esq., Winkhurst Green, Ide Hill, Sevenoaks, Kent. Pedigree Shorthorns, dual-purpose type, long pedigrees only. Inspected milk-records. Nearest Station: Penshurst 2½ miles.

South Devons.

Antony South Devon Herd, the property of Lieut.-General Sir Reginald Pole-Carew, K.C.B. Pedigree herd of deep-milking cattle, including cows of over 1,000 gallons. Daily milk records kept. Bulls, Cows, and Heifers for inspection and sale. Apply, C. G. C. Elers, Antony Estate Office, Torpoint, S.O., Cornwall.

Hancock, Charles, The Manor Farm, Cothelstone, Taunton. Herd of Devon Cattle. Telegrams and station: Bishop's Lydeard.

Sussex.

Goldsmid, O. E. D'Avigdor, Somerhill, Tonbridge. Herd founded in 1906. Kept in natural condition. Bulls exported to various countries. Twice won reserve for Breed Championship at Smithfield. Animals for sale. Apply, C. J. G. Hulkes, Somerhill Estate Office, Tonbridge. Telephone: 55 Tonbridge.

Sussex Cattle. All particulars respecting these Cattle can be obtained on application to A. G. Holland, Secretary, Sussex Herd Book Society, 12 Hanover Square, London, W.1.

Miscellaneous.

Stewart, D. A., Breeder of Pedigree Highland and Shorthorn Cattle, at Lochdhu, Nairn, and Ensay, Obbe, Inverness-shire.

SHEEP.

Cheviots.

Andrew Oliver & Son, Auctioneers, Hawick, Scotland. Conduct the Principal Sale of Cheviot Rams in the Kingdom. The Sale of 1920 takes place on 22nd September. Orders for home and abroad executed. Full information supplied on application.

Dorset Horns.

Merson, Frank J., and Son, North Petherton, Bridgwater. Dorset Horn Rams and Ewes always for sale descended from Royal prize-winners.

SHEEP—*continued.*

Hampshire Downs.

Edmunds, L., Estate Office, Cholderton, near Salisbury. The flock was founded in 1890 by the late Mr. H. C. Stephens, and is one of the most celebrated in the country, having won at all principal shows. Lambs, Ewes, and Shearling Rams for sale. Station: Grateley, L. & S.W.R. Telegrams: Cholderton.

Franklin & Gale, Auctioneers and Live Stock Agents, Market Place, Wallingford, Berks. Periodical sales of Hampshire Down Rams. Stock Ewes and Store Lambs, at Oxford Ram Fair and Ilsley Fairs and Markets.

Judd, Edward Thomas. Old-established and highly-bred flock of 850 Ewes and Ewe Lambs. Pedigree Hampshire Down. Noted for great size, quality, and hardy constitution. Ram Sales at Weyhill, Marlborough, Peterborough, and Stamford. Full address, Cocum, Sutton Scotney, Hants.

Kent or Romney Marsh.

Finn, Arthur Westbroke, Lydd, Romney Marsh, Kent. This flock grazed in Romney Marsh since 1740, gained second prize and reserve for champion in 1919. Ewe Flock Competitions. 2,000 registered Sheep can be inspected at any time. Selections for sale.

Jenkin, Bernard, Stowting Court, Stowting, Hythe, Kent. Pure-bred Kent or Romney Marsh Sheep Registered Flock, No. 187. Stock for sale. Station: Westenhanger. Telegrams: East Brabourne.

Miskin, Walter, White Hall, Hoo, Rochester.—Hoo Romney Marsh Flock No. 28, Vol. I., 500 Ewes. Rams and Ewes for sale. Sharnal Street Station. Telegrams: Hoo, Rochester.

Singleton Manor Flock of Kent or Romney Marsh Sheep. Regd. number 132. Owner, Richard Stanley Strouts, Singleton Manor, Gt. Chart, Ashford. Yearling Rams and Ewes for sale; wool a speciality. Champion and third prizes for best woolled rams at Ashford Show, September, 1918 and 1919. Outright winner of the Quested Challenge Cup. Inspection invited. Telegrams: Gt. Chart. Railway: S.E. and Chatham, Ashford, Kent.

Kerry Hill.

Hamar, John, The Farlands, Brampton Bryan, Herefordshire. Prize winning flock of Kerry Sheep. Championship 1919. Station: Bucknell. Telegrams: Hamar Lingen.

BREEDERS' DIRECTORY.

SHEEP—*continued.*

Leicester.

Brown, W. A., Elms Villa, Driffield, Yorks. Society's Secretary (Lord Middleton, President).—Secretary invites inquiries and executes commissions Leicesters were awarded championship at last Smithfield Club Show in competition with all other breeds of Long and Short Wools.

Lincoln Long-wools.

Brocklebank, Joseph, Carlton-le-Moreland, Newark. Pure-bred Lincoln Longwool, Flock No. 10. Large number sold for export every year. Given satisfaction both at home and abroad. Inspection invited. Telegrams: Bassingham. Station: Navenby.

Hoyles, Geo., Skidby Manor, near Hull. Pure Lincoln Long-wool Sheep; true type, sound constitutions; lustrous long wool; give satisfaction home and abroad.

Mosley, O. F., Leasingham, Sleaford. Flock No. 497. Winner four Firsts, two Champions, and a reserve Champion for Lincoln Sheep at Smithfield Shows, 1915 and 1916. Heaviest sheep in show. Choice Rams, Ewes, Gimmers, and Lambs for sale. Visitors met by motor.

Oxford Downs.

Akers & Co., Henry, Black Bourton. Clanfield, Oxon. Pedigree Registered Oxford Downs. Ram and Ewe Lambs on sale. Inspection invited. Annual Sales: Oxford Ram Fair, Cirencester, Shrewsbury, Kidderminster, Northampton, Nottingham, and Leicester. Many prizes 1915, 1916, and 1919, R.A.S.E.

Ryeland.

Hobbs, C. H., Oldport, Oswestry. Ryeland Flock, No. 11. Ewes and Rams for sale.

Homes, W. J., Gold Hill, Bosbury, Ledbury, Herefordshire. Breeder of pedigree Ryeland Sheep, winners of prizes. Flock established 40 years. Stock for sale. Rams used from leading flocks. Telegrams: Homes, Bosbury.

Ryeland Sheep, Clytha Park Flock, winners of many prizes in previous years, including four First prizes Herefordshire and Worcestershire Show, 1916, and two First prizes, four Second prizes, and one for wool at Royal Show, Manchester, 1916; winners of First prize best pen five Ewes at Hereford Ryeland Show and Sale, August 1918. Winners of several Prizes Royal Show, Cardiff, 1919. Awarded first Prize for best Ryeland Flock in United Kingdom, 1919. Shearling Rams and Ram Lambs, &c., for sale Apply, Manager, Clytha Park, Abergavenny.

SHEEP—*continued.*

Shropshires.

Bibby, Frank, Hardwicke Grange, Shrewsbury. Shropshire Sheep of choicest merit from celebrated prize-winning flock for sale and export. Also Berkshire Pigs. Apply, Bailiff, Hardwicke Grange, Home Farm, Hadnall, Shrewsbury.

Southdowns.

Marden Park Southdowns, the property of Sir Benard Greenwell, Bart. Station, Woldingham (within 17 miles of London, on the London, Brighton, and South Coast Railway). Registered Flock Book No. 77. A number of pure-bred Rams and Ewe Tegs by pedigree sires of the best blood always for sale. Particulars from J. W. Morgan, Estate Office, Marden Park, Woldingham, Surrey, who will be pleased to show the Flock by appointment. Telegrams: Morgan, Woldingham.

Suffolks.

Sherwood, S. R., Playford, Ipswich. First Prize Farm, R.A.S.E., 1911. Registered Flock 105. Highest award carcase competition at Smithfield Club Show. Large winner at Royal and County Shows. Holder of the Bristol Champion Challenge Cup for the best flock of the breed 1899 and 1919. Sheep of both sexes mostly for sale. Also Breeder of Pedigree Dairy Shorthorns and Large Black Pigs.

Sussex.

Hadlow Flock Co., Holborough Court, near Rochester, and Hadlow Place, near Tonbridge. Flock No. 126. Carefully bred flock descended from the noted Flocks of Messrs. Frederick Stunt of Higham, and Joseph Foster of Willesborough: under the same management from 1889. Full Pedigrees kept since that date. Every Ram and Ewe individually entered. Inspection invited. C. J. G. Hulkes, Somerhill Estate Office, Tonbridge.

Wensleydales.

Underley Wensleydales (Blue-faced), from the best blood obtainable. Successfully exhibited. Apply to Goland Robinson, Bailiff, Underley Farm, Kirkby-Lonsdale.

PIGS.

Berkshires.

Braishfield Manor Herd of Berkshire Pigs. Bred from best recent prizewinning strains. Young Stock always for Sale. Apply Mr. W. G. Owen, Elm Grove, Braishfield, Romsey.

PIGS—*continued.*

Berkshires.

Cadman, Peter, Etherton Hill, Speldhurst, Kent. Pedigree Berkshire Pigs usually for sale bred from prize-winning strains, removed from Troutsdale, Yorkshire. Also Dexter Kerry Cattle.

Cumberland.

Kirtley, George Coates, Broomley, Stocksfield. Northumberland. Pedigree Cumberland Pigs, Boars, and Gilts for sale; finest stock. Station: Stocksfield. Telegrams: Kirtley, Broomley, Stocksfield.

Gloucester Old Spots.

Cory, Webster, Manor Farm, Notgrove, Bourton-on-the-Water, Gloucestershire. Breeder of Gloucestershire Old Spot Pigs. Station: Notgrove, G.W.R. Telegrams: Cold, Aston. Telephone: 3y Bourton-on-the-Water.

Olympia Agricultural Company, Ltd., Thorney Park Farm, Thorney, near Peterborough. Pedigree Gloucester Old Spot Pigs of correct type and marking. 150 head of breeding pigs kept on open-air system. Young Boars, Gilts, and In-pig Gilts of highest quality always on sale.

Hereditary Grazers.

Friningham Herd, noted Hereditary Grazing Pigs, the result of many years of crossing and selection. Marvellous constitutions and capacity to thrive under exceptional conditions and at a minimum of cost. Mr. Harbord, Friningham, Maidstone.

Large Blacks.

Bainbridge, Mrs., Elfordleigh, Plympton. Foundations from Cornwood Herd. Boars and Gilts from choice winning blood on sale. Apply, Bailiff, Home Farm.

Blyford Hall Herd of Large Black, Pedigree Pigs, hardy and prolific, from best strains. Boars and Gilts for sale. Apply, S. and H. Scrimgeour; Blyford Hall, Halesworth.

Crouch, Francis Edward Anson, Wanford Mill, Rudgwick, Sussex. Wanford Registered Herd of Large Black Pigs. Boars and Gilts always for sale. This herd contains b ood from the finest strains in the kingdom. Satisfaction guaranteed. Station: Rudgwick, L.B. & S.C.R. Telegrams: Bucks Green.

Douglas Herd of Pedigree Large Black Pigs. Secretary, Pig Farm, Bonnybridge, Stirlingshire. Station: Bonnybridge. Telegraphic Address: Pig-Farm, Bonnybridge.

PIGS—*continued.*

Large Blacks.

Doult, Herbert T., Bennett's End Farm, Hemel Hempstead. Pedigree Large Black Pigs, also Light Sussex Poultry. Stock birds. Sittings, &c., in season.

Edge, S. F., Vahan Herd Pedigree Large Blacks. Royal Champion and other show winners. Reared on open-air system on heavy weald clay. Out winter and summer, will thrive anywhere. Hundreds to choose from. Inspection invited. Gallops Homestead, Ditchling, Sussex.

Large Black Pigs, Pedigree, kept on grass. Boars and Gilts, prices reasonable. Pedigree Guernseys. White Turkeys, White Wyandottes sittings and stock birds, Currie, Mayfield, Sussex.

Ley Spring Registered Herd of Large Black Pigs. Boars and Gilts for sale. Henry Seckington, Henfield, Sussex. Station: Henfield, L.B. & S.C.R. Telegrams: Seckington, Henfield.

Moser, F. R., Broadley, Sway, Hants. Registered Herd of Large Black Pigs. Boars and Gilts for sale of the best strains. Apply, The Dairyman.

Newhouse Herd of Pedigree Large Black Pigs, Boars and Gilts, from best strains for Sale, at moderate prices. Robert Fortune, Newhouse, Cranleigh, Surrey.

Pearce, E. W., The Cross Roads, Whittington, Lichfield. Large Black Pigs, Boars and Gilts, descended from Champion Royal winners, for sale. Prices reasonable. Stations: Lichfield City and Trent Valley, two miles.

Wilbraham Temple Herd of [illegible]gree Large Blacks, Property of R. S. Hicks, Esq. This Herd has won various prizes this year, and at the public Sale at Wilbraham on July 23, 1919, a 1st-prize Gilt, Wilbraham Talkative, realised 240 guineas. Selections for Sale. Apply, R. Nicholson, Gt. Wilbraham, Cambs.

Large Whites.

Edwards, Arthur B., Bushes Farm, Magdalen Laver, Ongar, Essex. Pedigree Large White Boars and Gilts for sale. Apply, A. B. Edwards, Brewery House, Harlow, Essex.

Hutchinson, T. H., Junr., Manor House, Catterick, Yorks. Large Whites. Best strains, including Bottesford Buttercups, and other fashionable families.

Pateley Herd Pedigree Large Whites, Nidderdale. Herd Pedigree Large Blacks (Open air system). Young Boars and Gilts for Sale from £5. Johnstone and Dickinson, Low Green, Pateley Bridge, Yorks.

BREEDERS' DIRECTORY.

PIGS—*continued.*

Middle Whites.

Arcadian Herd of Prize-bred Middle White Pigs. Founded on the best winning strains from Dalmeny, Histon, Prestwood, and Wharfedale. A Dispersal Sale of 100 Pigs by Messrs. Thornton will be held in May, and will include 60 Sows and Gilts in pig to the famous Royal and Championship winner Dividend of Wharfedale, Histon Hollywood winner at last year's Royal, and at Cambridge and other noted boars. The property of Edgar H. Robinson, Westwood, Scarborough.

Beechcroft Herd of Pedigree Middle White Pigs. Founded on finest prize-winning strains. True to type. Ivor L. James, Beechcroft, Stafford.

Bookham Herd Pure Pedigree Middle White Pigs, the property of Victor Hayward, Bookham Grove, Surrey. Large selection of Young Stock. Boars and Sows, prolific strain and early maturity. Winners of numerous prizes. Inspection invited.

Chivers, John, Histon, Cambridge. Select Herd of Pedigree Middle White Pigs, containing Royal Champions. Promising Young Stock for sale. Inspection invited.

Edge, S. F., Albany Herd Pedigree Middle Whites. Herd started from Champion Strains. Bred on open-air system. Out winter and summer on weald clay. Marvellous constitutions, wonderful doers and breeders. Hundreds to choose from. Gallops Homestead, Ditchling, Sussex.

Holland, Joseph Henry, Newington, Folkestone. Prize herd Pedigree Middle White Pigs. Prize-winning strains. Bred in the open. Hardy, prolific.

Jerome, Mrs., Bilton Hall, York. Pedigree Middle White Pigs, prize-winners. Boars and Gilts for sale.

Kirby Bedon Herd Pedigree Large White Pigs. Grand young Boars and Gilts at moderate prices. Hardy constitution, size, and bone. W. Mitchell, The Vale, Kirby Bedon, Norwich.

Salvation Army Land Colony Pedigree Herd of Middle Whites, bred from the best strains in the country. Careful selection made for buyers unable to make personal choice. Apply The Governor, Land Colony, Hadleigh, Essex.

Small Pedigree Herd, kept on grass. Boars and Gilts, prices reasonable. Pedigree Guernseys, &c. Also White Turkeys, White Wyandottes sittings, and stock birds. Currie, Mayfield, Sussex.

PIGS—*continued.*

Middle Whites.

Stapleford Park Herd of Middle White Pigs. A few choice Gilts and Boars always on sale at reasonable prices. C. S. Harvey, Wymondham, Oakham.

The Wharfedale Herd of Pedigree Middle White Pigs. Royal Show record: Won Championship 1908, 1909, 1910, 1913, 1914, 1915, and 1919. Also First Prize for pen of three Gilts at ten successive Shows. Well known characteristics of the Herd are true type and fine quality, combined with size and sound constitution. Prompt and careful attention to all enquiries and orders. Prices always reasonable. Apply, Leopold C. Paget, Middlethorpe Hall, York.

Weeley Herd of Middle Whites. Bred on the open-air system exclusively from Champion strains. Two 1919 Royal Show winners and the sire and dam of a 1919 Cattle Show winner were bred in this herd. Present Stock Boars are sons of Shrewsbury and of Prestwood Acrobat 1st (1st and 2nd at the 1919 Royal). Apply to Oscar Gray, Tendring Farms, Ltd., Weeley, S.O., Essex.

Tamworths.

De Hamel, Egbert, Middleton Hall, Tamworth. Pedigree Red Tamworth Pigs, Boars, Gilts, and In-pig Sows, bred from prize winners at Royal and County Shows. Prices moderate. Full particulars on application.

Yorkshires.

Brookfield Herd of Pedigree Large White Yorkshires. Pigs included in this Herd :—Gilt, 1st Royal Cardiff in pen of three; Sow, 1st Oxford, 1st Darwen, 1st Bath and West in pen of two, 1914; 1st Wirral and Birkeshead, &c. Young Boars and Gilts for sale at moderate prices. Inspection invited. Frank W. Hickton, Brookfield Farm, Belbroughton, near Stourbridge. Station: Churchill, G.W.R.

Caldmore Herd of Large White Pigs. Speciality at present, young Boars fit for service, Also In-pig Gilts and Gilts. Prizes won include 1st prize Boar under one year R.A.S.E. and Peterborough, 1914; 1st Boar, 2nd Gilt under one year R.A.S.E., 1915, with pigs bred in this herd; 1st and champion Boar, Peterborough, 1919; 1st reserve champion Boar under one year; 2nd reserve champion Boar, Royal, 1919—R. P. Haynes, Delves Green Farm, Wednesbury. Station: Walsall.

PIGS—*continued.*

Yorkshires.

CHIVERS & SONS, LTD., HISTON, CAMBS. Pedigree Large White Pigs. Fine quality, good type, best strains. Over 1,000 pedigree pigs bred annually. Young Stock for sale.

COMMITTEE OF VISITORS, COUNTY ASYLUM, WINNICK, WARRINGTON, Large White Pedigree Pigs. Railway stations: Warrington and Newton-le-Willows. Telegrams: Asylum, Winnick. Telephone No. 171, Warrington. All communications must be addressed, "The Steward," County Asylum, Winnink, Warrington.

DYOTT, RICHARD, FREEFORD, LICHFIELD, STAFFS. Large Whites. This herd was founded on Gilts purchased from the late Sir Richard Cooper, Mr. Ryman, of Wall, and Mr. Haynes, of Wednesbury.

EDWARDS, ARTHUR B, BUSHES FARM, MAGDALEN LAVER, ONGAR, ESSEX. Pedigree Large White Boars and Gilts for sale. Apply, A. B. Edwards, Brewery House, Harlow, Essex.

GREENALL, SIR GILBERT, BART., C.V.O., WALTON HALL, WARRINGTON. Walton and Worsley Herd Pedigree Large White Pigs. Since the purchase of the Worsley Herd from the late Earl of Ellesmere in 1913, Championships have been awarded at each Royal Show. Inspection and enquiries cordially invited. Apply to Richmond Daybell, Manager, Rowswood Farm, Higher Walton, Warrington.

KIRBY BEDON HERD PEDIGREE LARGE WHITE PIGS. Grand young Boars and Gilts at moderate prices. Hardy constitution, size, and bone. W. Mitchell, The Vale, Kirby Bedon, Norwich.

MICKLEOVER HERD OF PEDIGREE LARGE WHITE PIGS, property of A. Preston Jones, Mickleover House, near Derby. Boars and Gilts for sale.

STETCHWORTH HERD OF LARGE WHITE PIGS, the property of the Earl of Ellesmere. Boars and Gilts of all ages at farmers' prices. Apply, W. F. Gardner, Bridgewater Offices, Walkden, Manchester, or personally to Manager of Piggery, at Worsley, near Manchester.

TENDRING HERD OF LARGE WHITES. Bred on the open-air system exclusively from Champion strains. Present stock boars are sons of white Spalding Vulcan and of the 1919 Royal Champion Dalmeny Monette. Apply to Oscar Gray, Tendring Farms, Ltd., Weeley, S.O. Essex.

PIGS—*continued.*

Yorkshires.

WHITE, ALFRED W., HILLEGOM, SPALDING. Breeder of Pedigree Large White Pigs from best possible stocks. Winner of first and champion prizes at R.A.S.E. and other leading Shows. Inspection by appointment. Correspondence invited.

Various.

HITCH, CHARLES SAPPERTON, CIRENCESTER, GLOUCESTERSHIRE. Registered Oxford Down Sheep and Gloucester Old Spot Pigs. Pure-bred White Wyandotte Fowls and Runner Ducks. Particulars on application.

TIMBERLAKE, J., HASTOE FARM, TRING. Breeding Sows sired principally by Walton of Pendley, sire of Shrewsbury, first at Royal Show 1914 and 1915, and champion at Royal 1916. Gilts for sale.

POULTRY.

Black Middlewoods.

TAYLOR, C. HOWARD, MIDDLEWOOD HALL, NEAR BARNSLEY. Black "Middlewoods." This variety has been kept for table qualities only, and has been bred on the premises for over 20 years. Sittings and young Birds for Sale.

Buff Orpingtons.

MRS. M. DALTON HOLMES' BUFF ORPINGTONS. Gold Medal Pen 91 Harper Adams Agricultural College, 1916-17; highest Buffs, Burnley, 1913-14. At Seddlescombe No. 203 Buff Orpington Pullet secured three times the highest individual record, and has a record of 258 eggs. Silver Medal and Certificate U.P.C. 4 months Laying Competition, 1910-11. Eggs, 1*l.* and 12*s.* dozen, also R. Island Reds (goldens) and White Wyandotte, (Snowdon, Camb.), eggs, 12*s.* dozen, carr. extra; East Markham Hall, Newark.

Dorkings.

MAJOR, ARTHUR C. Breeder and Exhibitor thirty years. Champion Dark and Silver Grey Dorkings, "England's best fowl." Prizes at all shows. Birds exported all over the world. Prices moderate. Arthur C. Major, Ditton, Langley, Bucks.

Light Brahmas.

POPHAM, H. L., PENSFORD, SOMERSET. Good Light Brahmas at moderate prices. Also Utility White Leghorns. Cups and prizes won at Crystal Palace, Dairy, Birmingham, &c.

POULTRY—*continued.*

Various.

Hearnshaw, Roger Fletcher, Foxhill, Burton Joyce, Notts. Breeder record pedigree laying White Wyandottes and White Leghorns. Also exhibition Black Rosecomb and Scotch Grey Bantams. Birds and Eggs for sale. Send for Price List.

Morane Poultry Farm, Ltd., West Bromwich. Laying-strain Specialists. Worlds champion layers: Black Orpington, Rose Comb, White Leghorn, &c. Technical advisers on all Poultry matters. Send for Catalogue.

Tendring Farms, Ltd., (Oscar Gray, Managing Director), Bretts Hall, Weeley, S.O., Essex. Highest class Utility, trap-nested strains of all White Breeds. Special pens of White Wyandottes and White Leghorns contain only hens with egg records of 240 and over.

AUCTIONEERS.

Franklin & Gale, Auctioneers and Live Stock Agents, Market Place, Wallingford, Berks. Periodical sales of Hampshire Downs, Rams, Stock Ewes and Store Lambs, at Oxford Ram Fair and Ilsley Fairs and Markets.

German, Stevenson & Stimson, Ashby-de-la-Zouch. Agricultural and General Auctioneers, Tenant Right, Timber, Probate and Estate Valuers. Important Weekly Sales of Live Stock at the Ashby-de-la-Zouch and Swadlincote Markets. National Telephone 586. Telegrams: Stevensons, Ashby-de-la-Zouch. Partners: Frank C. Stevenson, Swepstone, near Ashby-de-la-Zouch; Alfred Stimson, Ashby-de-la-Zouch; and W. C. Stevenson, Swepstone, Ashby-de-la-Zouch.

Hall, Wateridge & Owen, Agricultural and General Auctioneers, Land Agents, and Valuers, Smithfield sales. Offices at Shrewsbury, Wem, and Oswestry. Proprietors of the Raven Horse Repository, Shrewsbury, and Mid-Wales Horse Repository, Newtown, Mont. Head Office, Shrewsbury. Telephone: 45.

Kittow & Son, J., Land Agents and Auctioneers, Launceston, Cornwall. Branch Office, Callington. Hon. Secs. Launceston Agricultural and Fat Stock Societies.

Lincolnshire Stock Auctioneers and Agents, Dickinson, Riggall and Davy, Agricultural Auctioneers, Valuers, and Estate Agents. Specialities: Supervision of Estates, Sales of Properties, Lincoln Red Shorthorns, and Longwool Sheep. Markets and sales. Offices: Louth, Grimsby, and Brigg.

MISCELLANEOUS—*continued.*

Lloyd & Sons, Frank, Auctioneers and Valuers, and Property Salesmen, North Wales Horse Repository, Wrexham, and Cheshire Horse Repository, Crewe. Cattle Markets: Wrexham, Crewe, Whitchurch, Ellesmere, Overton-on-Dee, Malpas, St. Asaph, Congleton, Abergele, and Caerwys. Property, Furniture, and other sales. Valuations of all descriptions. Head Offices, Wrexham and Crewe. Branches: Whitchurch (Salop), Ellesmere (Salop), and Abergele.

Maughan & Co., T. & I., Ltd. Live Stock Agents and Auctioneers, 7, Marlborough Crescent, Newcastle-on-Tyne. Weekly sales at Gateshead, Acklington, and Morpeth Market Auction Marts.

Oliver & Son, Andrew, Auctioneers, Hawick (one hour's run from Carlisle). Sales August to end of October of Lambs, Ewes, and Feeding Sheep. Numbers sold last year: 110,000 Lambs, 30,000 Ewes, &c. Full particulars sent on application. Commissions carefully executed.

Pope & Smith (C. T. Smith, F.A.I.): Auctioneers, Valuers and Estate Agents, Ledbury, Herefordshire. Sales of live and dead farming Stock. Commissions carefully executed. Correspondence invited.

Reeve & Finn, Stock Auctioneers, Valuers and Estate Agents, Rye, Sussex, and Lydd, Kent. Annual Sales of Pedigree Kent and Romney Marsh Sheep and Rams in Ashford Market, Kent, and Rye Market, Sussex.

Risdon & Leversha, F.A.I., Wiveliscombe, Washford, and Minehead, Somerset. Official Auctioneers to the Devon Cattle Breeders' Society and the Exmoor Horn Sheep Breeders' Society (for Somerset). Large sales of Devon Cattle and Sheep at their Auction Marts at Wiveliscombe, Washford, and Williton, and periodical sales at Raleighs Cross, Brendon Hill; Kingsbrompton, and Winsford (Exmoor Sheep) Sales of Pedigree Devon Cattle at Taunton and Exeter in February and October. Full particulars of all sales on application. P.O. Telephone: No. 5 Wiveliscombe, No. 3 Washford.

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